E-LEARNING AND IN-SERVICE TRAINING: AN EXPLORATION OF THE BELIEFS AND PRACTICES OF TRAINERS AND TRAINEES IN THE TURKISH NATIONAL POLICE

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This targeted research study, carried out by an officer of the Turkish National Police (TNP), investigated the perceptions and beliefs of TNP trainers and trainees towards the potential adoption and implementation of e-learning technology for in-service police training. Utilizing diffusion and innovation theory (DOI) (Rogers, 1995) and the conceptual technology integration process model (CTIM) (Nicolle, 2005), two different surveys were administered; one to the trainers and one to the trainees.

The factor analyses revealed three shared trainer and trainee perceptions: A positive perception towards e-learning, personally and for the TNP; a belief in the importance of administrative support for e-learning integration; and the belief in importance of appropriate resources to facilitate integration and maintain implementation.

Three major recommendations were made for the TNP. First, the research findings could be used as a road map by the TNP Education Department to provide a more flexible system to disseminate in-service training information. The second is to establish two-way channels of communication between the administration and the TNP personnel to efficiently operationalize the adoption and integration of e-learning technology. The third is the administrative provision of necessary hardware, software, and technical support.

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CHAPTER I

INTRODUCTION

Introduction

A couple of years ago, when a group of police supervisors were evaluating and discussing a face-to-face in-service training course which they had just completed, one of them mentioned new learning technologies for training. He was very sure that there was a program which could provide learning environments “any where and any time” to the learners. To support his ideas he said, “I read an article about police training in the United States. Some supervisors told me this might be a good idea but in the police organization or for police training it is not applicable because police training needs interaction.” Therefore, in Turkey, using e-learning for police training may remain a dream as long as police supervisors are not familiar with the new technologies. Another colleague warned, “It would require a lot of institutional support from the Turkish National Police administration; also, many more resources would need to be provided.” Other colleagues added, “To apply the new learning technology in police training could be expensive and it might take a long time.” One of the supervisors was intently listening and after this long discussion said, “I hope that one day this will come true.” That day, in fact, may be soon.

World-wide, police organizations constantly upgrade and improve their information and technology; thus, the Turkish National Police (TNP) provides in-service training to keep its members’ knowledge up-to-date. Thanks to in-service training, officers can refresh their knowledge and improve their skills. Also, as criminals continue to break laws through the use of new information and technology, police agencies need

to provide continuing education to increase their personnel's ability to deter criminals and to improve their officers' familiarity with the potentials of the various new technologies.

As a result of improved computer and internet technology, e-learning environments have been used by many governmental organizations and private companies during the last decade to effectively and efficiently deliver content. American police organizations have also begun to use e-learning for in-service training. The TNP is currently aware of this rapid technological advancement and wants to improve its own in-service training by using the new contexts.

Background of the Problem

To gain a better understanding of the problem being studied, the organizational structure of the TNP is briefly examined. The TNP is a highly centralized system. Its main headquarters is in Ankara, the capital of Turkey, from which the General Director of Security, the head of the police organization, leads. All other regional police headquarters are directed by this main headquarters. There are 81 cities, each of which is headed by a four-star police chief appointed by the General Director of Security. The TNP has around 174,000 members who are spread throughout the country, creating a big and powerful police force (Ozcan & Gultekin, 2000).

The centralized aspect of the police system naturally affects the education and training system in the TNP. There are four types of police schools: the Academy of Security Sciences, The Police University, The Police College, and regional police training schools. In the TNP, training has two main components: pre-service and in-

service. Pre-service training provides the theoretical background of policing concepts for the cadets before they join the TNP as professionals; in contrast, in-service training programs are organized by the TNP Department of Education for existing police officers. Both types are designed to provide updated information to the trainees about contemporary policing as well as to introduce new concepts related to recent changes in policing.

The training of police personnel has traditionally been carried out in a face-to-face or traditional classroom format and current in-service training programs are organized by the TNP Department of Education in this format. However, because of the increasing numbers of workers needing to be trained, difficulties have arisen with scheduling, with budgets, and with facility availability to provide in-service training to its members. For example, according to the current training system, police supervisors must come from all over the country to Ankara twice, first to take promotion exam and second for the final exam. However, they can also take the courses, first and final exams, through the internet. Each year, approximately 1,000 police executives attend these courses in Ankara, which results in economic and social problems. The socio-economic costs with centralized courses include approximately 160,000 lost hours of production, and over $1 million spent in travel and lodging costs. Also, there are adaptation problems before leaving the post and after returning to the job: officers leave their family alone during the courses and they may have adaptation problems when they return to work. Another problem is the disruption of work schedules when supervisors must redistribute staff duties during their absence. As mentioned, the national police organization is distributed across all of Turkey's 81 cities, each city with a police

organization directed by the TNP. All police supervisors must attend the courses in order to be promoted and they must travel to one center (Security Sciences Institute) at the Police Academy in Ankara (TNPA, 2005).

Another important factor is the level of expertise, or the professional breadth and depth that the TNP has. It is a single organization equivalent to the FBI, local police, and CIA in the U.S. Turkey is also active in United Nations (UN) missions; in fact, Turkey is second only to the U.S. for sending police units for supporting peace keeping forces within the United Nations missions all over the world. Beyond that, Turkey sends many police officers and supervisors to assist other international organizations, such as the UN, the Organization for Security and Co-operation in Europe (OSCE), and the European Union (EU) in different places of the world. Naturally, police supervisors who are working within the international missions need leave or permission to attend these particular courses in Ankara.

Statement of the Problem

With the development of computer-based information technology (IT), new forms of training techniques have been introduced. Using new forms of training techniques and technologies may provide more frequent, varied, and up-to-date content for in-service training for a greater number of officers. This does not mean that face-to-face in-service training would be completely replaced with e-learning. It would depend on course content. There may be courses that are face-to-face only or web-based only, or sometimes a blended system might be used. An e-learning environment for the TNP may provide more in-service training opportunities for its members. Understanding the

levels of willingness to adopt e-learning technology among the trainers and trainees in the TNP is crucial to determining the optimal implementation of training and examination methods.

This is particularly important because of a previous experiment with adopting new technology within the TNP. In 1998, a decision was made by the TNP administrators to introduce and implement a computer system for data storage organization from local and regional police stations. However, this directive was issued without following the standard protocol of practice of assessing reactions to interest in the technology, or comparing and contrasting the alternate choices. The administrators insisted on continuing to implement this particular system for the stated purpose despite indications that it was inappropriate. This project lasted one year; during this process much negative feed back was sent by both the supervisors and users of this project. Despite these warnings, the administration continued to use this program for a year, resulting in the staff's distrust and unhappiness with the new technology. After one year, this program was cancelled.

Therefore, before applying the new technology, creating studies to explore the beliefs and practices of technology use and consulting the involved users are vitally important to avoid any waste of monetary and human resources. The above anecdote also illustrates why the TNP may be initially cautious about embracing new technology again. However, if the TNP can go about the adoption and implementation process of this from an educated perspective in which we have already assessed possible difficulties not only with hardware and software but also for those who will be interfacing with it, then we can avoid many of these problems.

As previously stated, in the last decade, e-learning has been used increasingly all over the world by many governmental and private organizations. Web-based instruction technology is being exploited as a new, useful approach for distance learning. Technological improvements in education have certain positive impacts on learning and teaching (Oblinger & Rush, 1998). This e-learning technology can be used for police in-service training as a solution to the problems of the existing system: Many private and governmental companies are providing Web-based training to customers, users, and students. Well-known universities, such as Duke, Massachusetts Institute of Technology, New York University, and Georgia Tech, have e-learning courses (Schroede, 1999). The US FBI has created the Law Enforcement On-line (LEO) system. "LEO is a national interactive computer communications system and information service, an Intranet exclusively for the law enforcement community. LEO is also used as a vehicle to educate officers on the best technologies and practices in all areas of law enforcement" (LEO, 2005). The FBI Training Network (FBITN) provides e-learning environments for FBI members and officers from other police agencies. Additionally, Colorado Technical University (CTU, 2006) and the School of Criminal Justice at Michigan State University have on-line education programs for their Master of Science degrees (MSU, 2006).

In Turkey, the TNP has an intranet called POLNET that is a national computer communication system and information service similar to LEO. POLNET has connections with all police departments, as well as to the main headquarters, and acts as an information sharing system between all police departments (Pekgozlu, 2006). Currently POLNET is not being used for any kind of police training, but it could be used

for police in-service training. Additionally, the TNP has an information technology (IT) department along with computer programmers and experts, whose experience and knowledge could be used to create an e-learning environment.

Study Goals and Objectives

Before stating the study's goals, it is useful to examine Holloway's (1996) perspective for technological research:

> If we are to understand how technology is diffused and what kind of adaptation is needed, we must understand the context of technology and education in the larger culture. The perceptions of the teachers, students, and other stakeholders in the process, their real reasons for use and nonuse, require research that is reflective, grounded, and open. Studies that focus on the social context of the technology for decision makers, teachers, publics, and students are the most productive new perspectives for diffusion and adoption research. (p.1130)

With Holloway's advice in mind, the primary goals of this study are to address the following issues:

1- To discover the factors of institutional support, resources, and technology of delivery services among the TNP trainers in their technology integration efforts.

2- To understand the perceptions of TNP trainers and trainees to utilize e-learning technology.

3- To provide accurate information related to decisions involving the adoption or rejection of e-learning technology for TNP in-service training.

4- To determine if there is resistance from trainers and trainees to e-learning.

5- To explore whether e-learning can be used for TNP in-service training.

The main goal of this study is, by means of a researcher-created instrument, to explore the beliefs and practices of TNP trainers and trainees in relation to the use of e-learning technology for in-service training. It also seeks to characterize and identify factors involved in the adaptation and integration of e-learning technology for TNP in-service training.

Research Questions

RQ1- What are the attitudes and perceptions of the TNP trainers towards adoption of e-learning technology?

RQ2- What factors determine a TNP trainer's adaptation to e-learning technology?

- a- TNP command structure support for e-learning
- b- TNP resources for e-learning
- c- Technology of delivery service
- d- Trainer resistance and acceptance of e-learning technology
- e- Trainee resistance and acceptance of e-learning technology

RQ3- Which factors facilitate adoption for trainers?

RQ4- Which factors facilitate adoption for trainees?

Limitations

This research study has some inherent limitations, including the following:

1. This study is limited by the self selected and self-reporting aspect of the data provided by both trainers and trainees. The truthfulness and accuracy of the data are dependent on the willingness of responders.
2. This study is limited to TNP members. It may have limited generalization or application for other organizations.

Definition of the Terms and Constructs

An overview of the Diffusion of Innovation (DOI) theory and the Conceptual Technology Integration Process Model (CTIPM), which serve as the theoretical framework to explore the process of adopting e-learning technology for in-service police training, is provided. Additionally, descriptive definitions of terms and concepts are given in the last part of this section.

Adoption of Diffusion of New Technology

Rogers defined his widely used innovation diffusion theory in his 1962 book *Diffusion of Innovations*. Since then, due to its popularity for analyzing technological innovations, five editions (1962, 1971, 1983, 1995, and 2003) have been printed (Cheng, et al., 2004, p.440). According to this theory, the adoption of innovation is affected by four factors: communication channels, time, the innovation itself, and social system. Rogers' theory is appropriate for both individuals and organizations. Rogers (1995) described levels of technology adopter categories, and the five classifications are innovators, early adopters, early majority, late majority, and laggards. "Adopter categories are the classification of members of a social system on the basis of

innovativeness, the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than other members of a system" (Rogers,1995, p. 279). The population of each category tends to be 2.5%, 13.5%, 34%, 34%, and 16% respectively; in other words, it resembles an S-shaped curve. The S-shaped curve represents the cumulative number of adopters. This distribution rises slowly; then it accelerates to a maximum until half have adopted. The other half adopt more slowly, thus causing a decline as fewer and fewer adopt (Nicolle, 2005, p.5).

According to Rogers, innovation diffusion is "an innovation communicated through certain channels among the members of a social system over time" (1995, p.5). Rogers (1995) explains five main characteristics of innovations that illustrate the rate of adoption:

- Relative Advantage
- Compatibility
- Complexity
- Triability
- Observability

In respect to the validation in the ease of facilitating adoption and innovation, these factors are useful in the implementation process (Cheng, et al., 2004, p.440). All five characteristics of innovation will be given a deeper explanation in the next chapter. This theory has been widely studied by various disciplines and has inspired many studies, services, and products. These characteristics have been used by sociologists, professionals in the IT industry, and educators, among others.

Conceptual Technology Integration Process Model

An extensive literature review did not reveal a model specifically designed for e-learning technology in a police context. However, Nicolle (2005, p.52) has developed a model to measure the conceptual aspects with the process of integration of technology; her CTIPM was utilized for the purposes of the research. Although Nicolle's model was designed for research that looked at general professional development and integration models for University culture and faculty in relation to education technology, it is closely aligned to the e-learning situation that is envisioned in the in-service training for the TNP. Nicolle's model grew out of Rogers's (1962) work, which included instructional design principles, a theoretical framework, and general professional development and technology integration models. The resulting data is expected to inform the design of e-learning technology integration process that will be relevant to police in-service training. The following results will be used as a guideline for decision makers. In fact, after the exploration of the beliefs and practices, the present study may guide the development of a model to integrate e-learning technology for police in-service training. The results will also provide applicable recommendations regarding the general dynamics of the e-learning technology integration process.

The TNP is not currently using any e-learning technology for in-service training. This study aims to reveal the beliefs and practices of trainers and the interest of the trainees in order to make the integration process successful. This conceptual model includes the basics pillars of integrating new technology. These include Institutional Support, Institutional Resources, Peer Support, and Instructional Design and Delivery.

Nicolle (2005) explained this model in four conceptual parts. The first part of this model is motivation, which stems from self-satisfaction, external requirements, value on student learning, and value on instructional processes. The next part is crucial to application: institutional resources, institutional professional development opportunities, and peer support. As the application process becomes a reality, the actual content of the course comes into focus. The design, content delivery, and student use must then be considered. If the last part of the model occurs, there will be student success because of enhanced student to teacher interaction, student to content interaction, and student to student interaction.

Descriptive Definitions of Terms and Concepts

Descriptive definitions of terms and concepts used in this study are as follows:

E-learning - *E-learning* is "any learning, training, or education that is facilitated by the use of well-known and proven computer technologies, specifically networks based on Internet technology" (Fallon & Brown, 2003, p.4).

Synchronous e-learning - Synchronous e-learning provides interaction between the learners and the instructors at the same time.

Asynchronous e-learning - Asynchronous e-learning allows interaction for individuals or groups anytime, anywhere.

TNP – Turkish National Police

Education Department – This department is responsible for providing in-service training for TNP members.

In-service training- Training for specific members to improve their skills and to update their professional information and knowledge.

Justification for the Research and Significance of the Study

There is a lack of data in the application process of e-learning for in-service training. No other study of this type has been conducted in the TNP context. This study's results may be applicable for other training environments. The e-learning potential for TNP in-service training is clearly a good avenue to explore: other countries have already chosen e-learning contexts to train their national police or law enforcement entities.

First, the feelings of perspective training participants regarding e-learning must be assessed. According to Davis (1989), there are two scales to measure the adoption level; the first is perceived usefulness and the second is ease of use. He created the Technology Acceptance Model (TAM) to answer the question of "What causes people to accept or reject information technology?" These two concepts will be explored in this study. Thus, this study investigates the level of current technology integration among the TNP in-service trainers and trainees.

Although this is a current, accepted learning technology that other national law enforcement agencies have already chosen, it is still necessary to determine if this technology will be suitable for the specific educational and cultural constraints and needs of the TNP. Adopting e-learning technology is a costly and time-consuming endeavor. Therefore, before the decision is made to embark on this, administrators need to be sure that this is a good fit for Turkey and its infrastructure. The national unified nature of the TNP may be different from other law enforcement agencies, so the nature of training might be different from cases studied in other research.

CHAPTER II

LITERATURE REVIEW

Learning is what most adults will do for a living in the 21st century.

Parelman

Introduction

This chapter includes information from recent studies relevant to the topic of this research, e-learning, police in-service training, CTIPM, DOI, Technology Integration Models and learning theories. This chapter begins by reviewing the progress of e-learning and in-service police training, and then continues to explain the theoretical framework that will be utilized for this study by discussing the relevant extant research.

E-Learning

Since the mid 1990s, e-learning has been used increasingly all over the world by many governmental and private organizations. Web-based instruction technologies are being used as a new approach in distance training. Indeed, a short Internet search, using common Internet search engines, results in thousands of programs, services, and publications about distance education. In addition to the phrase “distance learning,” in the last decade, terminology for this technology has grown to include phrases such as: Web-based learning, Web-based instruction, interactive learning, tele-learning, intelligent computer instruction, on-line learning, e-learning, new educational environment, adaptive training system, and technology-enhanced learning. To prevent confusion, it is important to define the terms used for this research.

Web-based training is synonymous with Web-based learning, Web-based instruction, and on-line training. Web-based training is defined as a learning style that delivers learning materials and the learning experience completely or partly through the Internet or an intranet (Trombley & Lee, 2002).

E-learning is defined as delivering learning materials and experiences using technology such as Internet, intranets, CD-ROMs and satellite-transmitted video (Schafter, 2001). E-learning has the same meaning as technology-based learning. Another definition of e-learning is "any learning, training, or education that is facilitated by the use of well-known and proven computer technologies, specifically networks based on Internet technology" (Fallon & Brown, 2003, p.4). Rosenberg states that there are three principles for e-learning:

> E-learning is networked, which makes it capable of instant updating, storage/retrieval, distribution and sharing of instruction or information. It is delivered to the end-user via a computer using standard Internet technology. It focuses on the broadest view of learning-learning solutions that go beyond the traditional paradigms of trainings (Rosenberg, 2001, pp.28-29).

Web-based courses are being offered not only by developed countries and regions, but also by less-developed countries in different regions of Asia, Africa, and South America. For instance, Web-based courses in engineering and business are being offered by some universities in India (Aggarwal & Bento, 2000). Instead of face-to-face courses, more Web-based courses are being offered today because advances in telecommunications and information technology (e.g., audio, video, and high-speed Internet connections) enable users to communicate in groups, and to choose to chat

synchronously and/or asynchronously. According to Van Dam (2004), e-learning started to gain interest in 1995, and it spread very fast until 2000. The years 2000-2002 have been referred to as the stagnation phase, because of the economic recession resulted in almost no growth. However, after 2002, e-learning started to be used more frequently by governmental and private organizations.

E-learning Styles

It is difficult to always coordinate the instructor and the distance learners at a set, determined time; therefore, three styles of e-learning are used. The first e-learning style is *synchronous* e-learning, which provides interaction between the learners and the instructors at a specified time over the Internet. Because everyone is using the same time interval, students can communicate with their instructors and the other students (Henderson, 2003, p. 130, Waggoner & Christenberry, 1997).

The second e-learning style is *self-directed* learning. Students work through course content materials by themselves without time constraints. Self-directed learning does not provide the interaction between students and the other students; instead, students teach themselves. Because there is no schedule, learning is available whenever the student wants it (Henderson, 2003, pp. 133-134).

The last e-learning style is *asynchronous* or *collaborative* learning, which blends the first two e-learning styles. The students can interact with the instructor and other students by using e-mail, posting their messages in discussion Webs, and can exchange their electronic documents. In this e-learning style, students do not need to be on-line at the same time. Students can share their ideas while they are working; and if

they have questions, students can ask by sending e-mail or postings to the instructors or the other students (Henderson, 2003, pp. 130-131, Waggoner & Christenberry, 1997).

E-learning Interface Design and Operations

Learning environment creators consider effective design techniques, goals, background of instructor and student, content requirements and technical limitations. Effective e-learning courses should provide interaction between instructor and students. According to Garrison (1990), successful e-learning systems should not insulate students from available resources. Learners post their project and ideas which contributes to the artifact base; in turn, these contributions can be used for the next group of learners. Instruction designers should include assessments in class instructions to receive feedback about immediate learning needs, and should send learners information about their progress (Wilson, 2004). E-learning course designers should also use multimedia programs and images to attract the students.

Training

To maintain successful e-learning, students, staff, and faculty should be trained on e-learning technologies, on how to operate the Web, and on how to develop Web-based design and instruction. In fact, in many organizations, 70% of the technology budget is allocated for planning projects and training users (Stuart, 1998).

The Advantages of E-learning

E-learning has many advantages for students, instructors, parents, and educational administrators and policy makers. Technological improvements in education have had a positive impact on learning and teaching (Oblinger & Rush, 1998). Thanks to educational technology, life-long training becomes more possible and acceptable (Porter, 1997). Students have more opportunities to obtain education from e-learning because of the flexibility and accessibility. In e-learning, the instructor can use audio or video clips, textbook supplements, and on-line periodicals to improve the course content (Motamedi, 2001; Waterhouse, 2005, pp.11-12, 142). The e-learning environment supports students by increasing their writing skills: to communicate with instructors and other students; they must write to discuss issues with each other, as well as receive feedback from instructors and classmates (Barrett, 1995).

Instructors also benefit by using e-learning as they can monitor their students and communicate with them. Instructors can create effective and immediate responsive communication with their students. An e-learning environment provides an opportunity to invite academicians, practitioners, and experts as guest speakers from anywhere, thus adding a broad view to courses (Thornbory, 2003; Waterhouse, 2005, p. 16).

Another one of the most important advantages is lowering cost – although e-learning requires a big start-up budget and IT infrastructure, it is one of the most cost-effective methods in training when considering all forms of educational expenses. Because e-learning minimizes or lessens travel expenses and housing costs, classroom infrastructure requirement removes or sharply decreases. When e-learning environments are designed, courses can be accessed by 2 or 20,000 learners. It is

really easy to change and revise course contents and materials (Killion, 2000; see also Motamedi, 2001; Rosenberg, 2001, p.30; Thornbory, 2003).

Constructivist Learning Environment and Instructional Design

Moallem (2001, p.116) stated that "Jonassen's 'Constructivist Learning Environment' model is widely used to design and develop instruction for computer-based learning environments." Jonassen paired design principles related with what he called a constructivist learning environment. These principles are:

- Create real world environments that employ the context in which learning is relevant.
- Focus on realistic approaches to solving real-world problems.
- The instructor is a coach and analyzer of the strategies used to solve these problems.
- Stress conceptual interrelatedness, providing multiple representations or perspectives on the content.
- Instructional goals and objectives should be negotiated and not imposed.
- Evaluation should serve as a self-analysis tool.
- Provide tools and environments that help learners interpret the multiple perspectives of the world.
- Learning should be internally controlled and mediated by the learner (1991, pp.11-12).

Constructivist models are based on principles that facilitate designing a constructivist-learning environment. Web-based learning environment designers and

developers should seek and choose the approach to learning that is most appropriate and useful.

Adopting Constructivist Principles to a Web-Based Learning Environment

According to constructivism, the student and teacher bring prior knowledge to the learning experience and add to it by using interaction with each other, as well as interaction with other students. They can enlarge their knowledge piece by piece in the e-learning environment. Therefore, constructivism supports the active construction of knowledge in the mind of the student and embeds learning in a social experience. Constructivist learning environment should provide multiple types of representation (multimedia) and during the learning process should support interactivity with feedback.

The Disadvantages of E-learning

Barriers to E-learning

Galusha (2000) presented a comprehensive synthesis of the available literature on problems with distance education. She organized them in five categories; “student demographics”, “student barriers to distance learning”, “faculty barriers in distance learning”, “organizational barriers in distance learning”, and “course consideration.” She asserted that distance learning is “an excellent method of reaching the adult learner”, before discussing barriers to learning in distance education. At the beginning of the 21st century, distance learning technology was very new, and naturally had many technical obstacles. Since the publication of Galusha’s literature review, thanks to more technological research and improvements, many of the obstacles and barriers

described by Galusha have decreased. Nonetheless, Galusha' s overview is still valuable and thus will be discussed further.

Student Demographics

Galusha noted that currently "adult distance learners are a diverse population; however, in general we can say the adult learner is typically employed full time, and has personal commitments that compound his efforts in furthering his education" (2000, p.4). Interestingly, in the earlier days it was found that unemployed wives were the least likely to drop out of distance education (Carr & Ledwith, 1980, in Galusha, 2000, p.4.).

Student Barriers to Distance Learning

Galusha provided many examples from the literature and described these barriers in different categories such as, "costs and motivators, feedback and teacher contact, student support and services, alienation and isolation, lack of experience, and training" (2000, p.4). Earlier studies showed that these barriers contributed to a higher distance-student dropout rate than that of traditional students. And although technological improvements have been made, some of these barriers still exist. Nonetheless, these barriers should become less and less problematic as technology continues to overcome them.

Faculty Barriers to Distance Learning

Galusha (2000) mentioned that faculties need staff training on course development and technology; this is especially important for faculty members who are

not familiar enough with the formats or concepts to use the technology. Also, preparing or adapting course materials for online classrooms can impose a burden on faculties who already have formatted material for traditional classroom delivery. They need institutional support; in fact, a lack of support was determined to be the biggest problem, because faculties would have to change their teaching style. Galusha pointed out, in an interesting note that “students respond to this changing environment more adeptly than teachers do.” (2000, p.5)

Motivation is another significant barrier for both groups: Galusha argued that “interest and motivation are not success factors reserved only for the students”, and asserted that “faculties who want to teach online courses are certainly more likely to be successful than faculty that are forced to teach those courses” (2000, p.5).

Organizational Barriers in Distance Learning

Since institutional support, institutional resources, and professional development are playing key roles for successful distance learning, there is a need to create an administrative unit to manage the program. Indeed, it seems that distance education is not a feasible option if the support and resources are not in place (Marrs 1995, in Galusha, 2000, p.4). She summarized the technology problems as financing new technology, telecommunications availability, hardware issues, course production and technology concerns, and the Internet access. With cost and benefit issues, Galusha asserted, one of the main concerns is available funding for both learning institutions and students. Institutions should be prepared for the initial cost, installing, maintaining, using, and upgrading technology to support online services. Another obstacle is “relying

solely on the Internet for courseware and communications transmission is risky" (2000, p.6). For example, it is clear that today's world trade and banking system rely on the Internet, this is risky, but it is inevitable.

Course Consideration

Just being willing to approach the distance learning is one of the big barriers for course consideration. Galusha mentioned that "many believe distance courses are inferior to traditional courses. Careful attention must be paid to the quality of the material presented in distance courses" (2000, p.7). For both traditional and long distance courses, the content and syllabus should be the same regardless of method of delivery. Research data showed that "there was no difference between distance and internal students in the proportions of students in each grade category" (Harden et al, 1994, in Galusha, 2000, p.7).

Galusha concludes her paper with hope for the future of distance learning despite its position at the turn of the 21st century. "Although distance learning is not new, it has not received respect in the academic community because of the number and seriousness of problems presented here" (2000, p.9). Today, almost a decade later, as she expected, distance learning has received respect not only in the academic community, but also in public and private organizations.

The researcher of this focused study believes that distance learning or e-learning will continue to increase in popularity because of its clear potential. And, as mentioned before, barriers should become less and less problematic as technology overcomes them.

E-learning in Security and Law Enforcement Contexts

In this section, examples of on-going e-learning applications adopted by security and law enforcement organizations at international, national, regional, and local levels are presented. This cross-section provides a clear view of the wide-spread implementation and applications of this educational technology, its various advantages, and its possible limitations.

International Organizational Level

The United Nations (UN) is a large scale international organization with many members around the world. Within this organization, an Institute to provide training and research opportunities, called the United Nations Institute for Training and Research Program of Correspondence Instruction in Peacekeeping Operations (UNITAR POCI), exists. This institute has served over 10,000 students from more than 120 countries. One of its missions is to ensure that "for effective military and civilian peacekeeping activity, all peacekeepers … receive standardized training and preparation" (UNITAR, 2006).

Based on statistics from the official UN website, at the end of 2005, almost 100,000 personnel from 108 nations had been involved with various peacekeeping missions. This institute has further stated that mission includes providing "distance training to peacekeepers, potential peacekeepers, police, and humanitarian workers world-wide through e-learning and printed courses that are standard, common, universal, and low-cost" (UNITAR, 2006). In their e-learning program provided by

UNITAR POCI, called “Self-Paced Distance Training and Classroom Courses”, there is no communication between student and instructor synchronously. In accordance with this learning system, module contexts and reading materials related to the specific course topic are presented. Student may enroll in more than one course to earn a Certificate of Training from the United Nations Peace Support Operations. At the end of each course the student must pass a comprehensive examination to obtain the certificate.

After reviewing the UN online training website, it seems obvious that the UN is using e-learning technology to provide more training opportunities for its members in a variety of contexts. This organization is facilitating many different programs to increase training opportunities for a variety of groups and interests. These include “Nationally Administered Distance Training Program in Peacekeeping (NADTPP) and Bulk Enrolments for Governments and Large NGOs, Integrated Distance Learning Program (IDLP), Military Contingent E-Learning (MCEL), International Staff E-Learning (ISEL), and E-Learning for African Peacekeepers (ELAP)” (UNITAR, 2006).

E-learning thus affords the UN an efficient way of ensuring a base of shared, highly relevant background knowledge for the disparate people involved in issues of peace keeping. At the same time, it also allows easy access to informational modules that provide prerequisite foundational information necessary for further courses.

National Organizational Level

Australian Government Department of Defense

Among the national organizations that have adapted e-learning technology for their defense education and training needs, Australia has already seen savings both financially and time-wise. The Australian Defense Organization (ADO) is a large-scale organization which has around 100,000 military and civilian members. In a recent business article, Pratt (2000) discussed the use of e-learning by the ADO. She explains that this organization has an institute, the Directorate of Flexible Learning Solutions (DFLS) [1], which developed a project, Defense Online Campus, to provide training and education program for its members in a more flexible, efficient and cost effective manner. Even though DFLS has not calculated all the returns, according to military officials, it is believed that

> they have seen savings from reduced travel costs as well as reduced time away from jobs to attend classes. They have also seen an increase in the number of people enrolled in courses, because the online option allows personnel easier access to training (Pratt, 2006, p. 48.)

Currently, the Defense Online Campus (DOC) provides more than 140 online courses. Hence this is one of the largest nonacademic e-learning system

[1] When the Australian Defense Organization decided to explain its e-learning capabilities, it put the project under the Directorate of Flexible Learning Solutions (DFLS), located at Northbourne House, Canberra. The move circumvents the usual practice that puts IT in charge of all technology-related deployments. But in this case, it ensured alignment of key learning objectives and technology meant to support them, says Brett McDonald, director of Flexible Learning Solutions. “I have seen that a lot of these types of implementations haven’t been as educationally sound or effective if they’re run out of the IT division, because they’re more concerned about making sure the systems work,” says McDonald. “But our key focus was making sure the IT meets the functionality requirements.” That doesn’t mean that tech skills were undervalued or that IT was shut out of the process. McDonald says he has been involved in e-learning for nearly 10 years. Dane Buchardt, deputy director of the DFLS and project manager during the implementation, has a bachelor’s degree in adult education and a master’s in computer science. And the IT department was one of the major stakeholders in the project. McDonald says his group and the IT department did not have ongoing meetings to make sure the business needs nor the technology requirements got shortchanged. The cooperation continues post deployment. The DFLS help desk, for example, is linked to the IT help desk, so workers calling with questions are guaranteed to get a response from the person with the right expertise, McDonald says.

implementations in Australia. As Claire Schooley, an analyst at Forrester Research Inc. in Cambridge, says “this is a growing trend worldwide, as learning becomes something that all organizations have to be active in for competitive reasons,” with this DOC project ADO has clearly exemplified this trend (Pratt, 2006, p.49). Pratt further provides an example of the intersection of national and international needs and interests being met by e-learning when she describes a training module developed by the DFLS for the UN.

In addition to the cost and time savings, another benefit is its flexibility. Pratt cites the case of the Australian Defense Force Peacekeeping Center. Wendy Horder, an Air Force wing commander and its director,

> now offers an eight-hour United Nations course to personnel via the online system. About 500 people have taken the online course since last July. The cost? Only $100,000, the price of the contract to develop the e-learning content, Horder says. It would have cost $750,000 to train that many people in face-to-face sessions (Pratt, 2006, p.49).

Pratt further notes that Brett McDonald, director of Flexible Learning Solutions at the ADO, says “the objective today is to grow the system. . . . to see more interactive programming and more functionality in addition to more training offered in synchronous ways, such as in virtual classrooms” (Pratt, 2006, p.49).

Royal Canadian Mounted Police (RCMP)[2]

[2] See RCMP official website: The Royal Canadian Mounted Police is the Canadian national police service and an Emergency of the Ministry of Public Safety and Emergency Preparedness Canada. The RCMP is unique in the world since it is a national, federal, provincial and municipal policing body. We provide a total federal policing service to all Canadians and policing services under contract to the three territories, eight provinces (except Ontario and Quebec), more than 200 municipalities, 165 Aboriginal communities, three international airports and numerous smaller airports.

Another law enforcement organization at the national level that is following the trend is the RCMP, which spent $1 million on an e-learning project to provide training to 23,000 members transnationally. E-learning “allows it [RCMP] to consolidate all its courses on one platform and provide customized content to user groups” (Lysecki, 2006, p.1). Simon Pare, manager of the RCMP’s technology-assisted learning unit, insists that “continuous learning is a life-or-death matter for us and for our citizens, so it’s paramount to make training as effective as possible” (Royal Canadian Mounted Police WebCT, 2006).

Police Culture and POLNET

Leonard (1980) pointed out that new technology has direct application in police training academies and in-service training programs. However, many people and organizations have resistance to change. This is true in a police environment, as well; Chan examined “the dynamics of change and resistance within a police organization when reforms were introduced to improve relations between police and minorities” (1997, p.1). The idea of using the new technologies for police training might also meet resistance and rejection.

Information technologies are playing an integral and increasingly vital role in policing (Chu, 2001). For example, the US FBI created the Law Enforcement On-line (LEO) system for communication within the organization, and now they are also using this system for training.

Today in the TNP, new technologies are used in every phase of the police operation, such as police records and data management, criminal investigation,

personnel administration, and the criminal identification system. To facilitate communication and information sharing, the TNP has created an intranet which is called POLNET. POLNET was created for knowledge management and to increase the performance in the TNP. Providing a secure network system, POLNET serves to allow Turkish police officers to access a national database that includes different kinds of information storage, such as a criminal record database, a vehicle database, and the data for terrorist or organized crime groups. Literally, POLNET was designed to provide for all the needs of Turkish police officers, including communication between different agencies (Yazici, n.d).

The creation of the POLNET system in Turkey was based on many reasons. Firstly, in the last decades, because of the rapid changes in the social, economic, political, cultural, and industrial structures of Turkey, and the growing population, new types of crime and its methods of implementation have appeared. To counteract this, the TNP established strong communication systems among the agencies. Secondly, due to the requirements of e-government applications and citizen satisfaction, the TNP should be able to respond to the appeals of online inquires of services such as passport and driving license issues, so an e-government system like POLNET has been inevitable for the TNP. Thirdly, the TNP must communicate with other security organizations in Turkey in terms of information sharing. POLNET provides the communication and sharing environment to do this. Fourthly, as with domestic communication, there is a big need for sharing and communication with international police organizations, such as Interpol and Europol, because of the increasing international organized crime organizations all over the world. Fifthly, creating timely

and competent information and communication system within the TNP to support and promote decision making process has been a demand of contemporary policing. And finally, establishing an efficient and cost effective communication system in terms of economical considerations by eliminating duplications and errors in the system has needed in the TNP (Pekgozlu, 2003).

The TNP spent $20 million for the POLNET project between 1996 and 2000. The second phase of this project started in 2002 and was finished at the end of 2005. The second phase of the POLNET project had an estimated cost of $36 million and $9 million for maintenance. Since June 2005, many different programs have been developed by different areas of policing in the POLNET system. Many statistical programs, 31 main applications, 51 search programs, and 26 local programs have been installed within the POLNET system to foster the search capability.

The POLNET system has currently 33,000 users with 13,567 workstations. The workstations are set up at all borders, airports, and provinces of Turkey. The number of processes performed daily on POLNET system is around 2,500,000 (Sozen, 2007). This system has been so successful that POLNET received a reward from the Turkish Informatics Foundation and Turkish Industrialists' and Businessmen's Association (TUSIAD) in the competition of e-government projects that support the transformation of information technology in the applications of e-services in 2003. Its capabilities are now such that POLNET can be used for police training like FBI-LEO.

Police In-service Training

In the digital age both technology and information change so rapidly that an organization needs a plan for evaluation and implementing change. Providing in-service training, staff training, or personnel development training is a significant way to keep up with the changes. One of the most important goals of in-service training is to increase the productivity and efficiency of personnel during their tenure. There are personal and organizational advantages of in-service training. Improving self-confidence in the job, providing easy communication with colleagues, suffering less dissatisfaction from the job, and being prepared for more promotion opportunities are some of the personal benefits. Increasing the quality of services, helping the institution to make reorganization effective, providing easy adaptation for new improvements, and giving promotion opportunities to the staff are some of the institutional benefits (Kazu & Gumus, 2000).

The idea of life-long training or continuous training is crucial for both person and organization. Both governmental organizations and private companies acknowledge that spending money for in-service training is not a waste of money. In a law enforcement context, without in-service training, it is almost impossible to continually assure competent policing for society. In the literature, many authors emphasize the importance of in-service training in different areas of expertise. For example, Mary (2005) asserted that this kind of training is very essential not only in transformation of the police organization, but also in creating a peaceful society. Kazu and Gumus defined in-service training in police contexts as a process of learning about the latest changes and improvements in all policing-related subjects to maintain high quality

service. They also mentioned that in-service training is necessary for every profession, but for the police, in-service training is vitally important (2000).

Police agencies benefit from providing in-service training for their members to improve their skill and knowledge and to aware of any new improvements in the field. However, this does not happened without a cost. Nelson (2006) notes some police agencies have financial problems and may not have the man power or the resources to send their officers away to in-service training. He pointed out one solution might be to create partnership programs between police departments and colleges, giving an example from Clackamas Community College. This college provided an on-line internet access that allowed its local police-officer students to refresh or improve their knowledge without coming to the class. Currently, many law enforcement agencies at the national or local level are providing synchronous or asynchronous on-line training for their staff.

Most of police agencies require obligatory in-service training; often it is 40 hours in 2 years for their officers. If officers do not complete the minimum training hours, they will lose their job certificate. This is negative motivation; on the other hand, some police agencies put positive incentives to participate more training program. If officers attend more than more 120 hours of in-service training programs, they will be paid extra money. Negative or positive, there should be a sanction or punishment, and a bonus or incentives to motivate the staff to participate more in training programs- and one way is to provide more opportunities or flexibility in the training. Currently, law enforcement agencies in the US are providing in-service training both face-to-face and online.

Theoretical Framework

Conceptual Technology Integration Process Model (CTIPM)

Nicolle (2005) created this model by using general instructional design principles, technological, individual, organizational, teaching and learning factors, and general professional development and technology integration models. As shown in the Figure 1, she developed this conceptual model mostly by utilizing Rogers' (1962) adoption and DOI theory. Prior to her own research, other relevant studies had been conducted which Nicolle utilized to develop her survey instruments and interview questions.

One of the foundational studies Nicolle draws upon was conducted at the Institute for the Integration of Technology into Teaching and Learning at the University of North Texas (Knezek, Christensen, Miyashita, & Ropp, 2000). Other research about technology integration into teaching and learning was designed to explore the K-12 classroom teachers' perspectives, barriers, and proficiencies. This case study was conducted by Lynch, Bober, Harrison, Richardson, and Levine (1998). Dr. Christopher Moersch developed a scale using a multi-level focus instrument, the Level of Technology Implementation (LoTi); which has been used in many different doctoral studies (Moersch, 2001). Another useful survey was conducted by Lea, Clayton, Draude, and Barlow (2001) to explore the information from full-time faculty about instructional technology resources and services for faculty members and students. Finley and Hartman (2004) used mixed methodology of interviews and survey instruments to explore issues concerning university culture, teaching styles, skills, and pedagogy.

Relevant research also emphasized the importance of communities of practice and socialization of learning through the diffusion networks. Nicolle used theories proposed by Wenger (1998) about communities of practice and the role of peer support in the technology integration process.

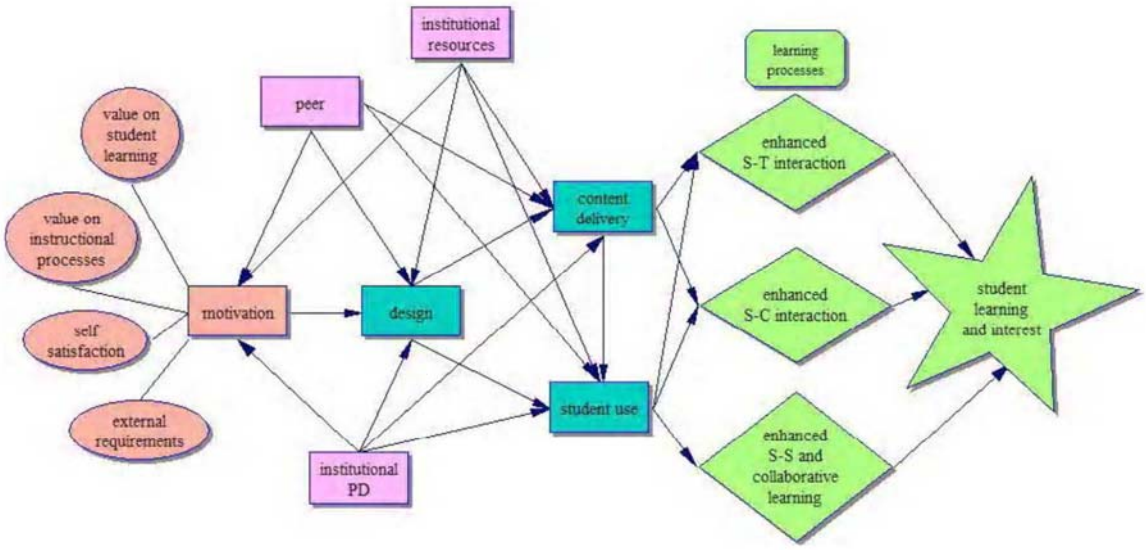

Figure 1. Conceptual technology integration process model. (Nicolle, 2005)

Nicolle improved this model using "personal observations, personal experiences with the topic, expert opinions from professional faculty, common sense and logic" (2005, p.51). This study focused on her university's mainstream faculty (her research population) which embraced 84% of adopter categories rather than the typically addressed 16% of the population representing the innovators and early adopters (Nicolle, 2005). This conceptual model was designed for a technology integration process mode related to higher education, but this model focused primarily on the mainstream faculty member's adoption –decision-implementation process. Nicolle also

utilized two proposed assumptions by Mehlinger and Powers (2002): 1) Technology has an impact on how we teach and learn and 2) Technology has an impact on the role and performance of higher education faculty.

This model combines instructional design, principles of design, development, and implementation via the research constructs of Instructional Design and Instructional delivery. The constructs Peer Support and Institutional Support were composed by the contribution of earlier professional development model elements (Nicolle, 2005).

Nicolle divided the model in four components:

1) Support systems for integration; available for use by faculty members, composed of institutional professional development, institutional-provided resources; including physical sources and motivations, peer support,
2) Motivation components; composed of self-satisfaction, external requirements, student learning, and instructional processes including instructional delivery, instructional design and collaboration,
3) The design, delivery and student use,
4) The learning process includes student-teacher interaction, student to content interaction, and student-student interaction/collaborative learning.

Diffusion of Innovation (DOI)

Russell and Hoag (2004) argued that DOI theory explains that information flows by means of communication networks and channels in the society and the diffusion of an innovation is shaped in this society by being affected by these channels. The innovation adoption process is defined as “the mental process through which an

individual passes from first hearing about an innovation to final adoption" (Rogers, 1995, p.35).

Rogers (2003) articulated four main elements in the DOI. As mentioned in the definition of diffusion, it is "the process by which (1) an innovation (2) is communicated through certain channels (3) over time (4) among the members of a social system" (p.11). It is clear that, four main elements are the innovation, communication channels, time, and the social system.

The Innovation

Rogers defines the innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (2003, p.12). He summarized "if an idea seems new to the individual, it is an innovation" (2003, p.12) and points out that "innovation" and "technology" are using very often as synonyms. That all innovations should be subject to the same units of analysis is a false assumption, he cautions, because some innovations such as cellular phones and VCRs needed only a couple of years to reach common adoption in the United States, but other new ideas, such as using metric system or seat belts in cars, need decades to reach complete use.

Rogers defines the five important characteristics of innovations, as decided by individuals that affect their different rates of adoption.

1) Relative advantage

Rogers defines this as "the degree to which an innovation is perceived as better than the idea it supersedes" (2003, p.15). Measuring the degree of relative advantage is sensitive, because it may be measured in economic terms; however, social prestige,

convenience, and satisfaction are also important factors. To express the relationship between relative advantage and rate of adoption, he says “the greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be” (Rogers, 2003, p.15).

2) Compatibility

Compatibility is defined as the degree to which an innovation “is perceived as being consistent with the existing values, past experiences, and needs of potential adopters” (Rogers, 2003, p.15). For example, if an idea is not compatible, it means values and social norms are not going to adapt to it as fast as to an innovation that is compatible. For example, Muslims and Catholic nations have resistance to using contraception because of their religious beliefs, so this incompatible innovation is not going to be adopted rapidly in those countries (Rogers, 2003).

3) Complexity

Complexity is explained as “the degree to which an innovation is perceived as difficult to understand and use” (Rogers, 2003, p.16). If an innovation is complicated, it will be adopted more slowly. Some innovations are easy to understand and use, so they will be adopted more rapidly than complicated innovations. Therefore, Rogers summarized the complexity as “new ideas that are simpler to understand are adopted more rapidly than the innovations that require the adopter to develop new skills and understandings, such as the Dvorak keyboard” (Rogers, 2003, p.16).

4) Trialability

If an innovation is trialable, it will be adopted more quickly than the innovations that are not divisible (Rogers, 2003). Therefore, many companies provide trial versions

of their products, then, if users or customers like to use them, they can buy the real versions. This gives the advantage of adopting the innovation rapidly. Because of that, innovation may be experimented with on a limited basis (Rogers, 2003).

5) Observability

If an innovation's results are visible to others, the innovation is more likely to be adopted rapidly. Due to the visibility, peer acceptance will be faster than normal as the innovation is discussed by friends and peers. They will receive feedback from the adopter's evaluation. Rogers states that "the easier it is for individuals to see the results of an innovation, the more likely they are to adopt" (Rogers, 2003, p.16).

Communication Channels

Communication is the process of reaching a mutual understanding among the participants by creating and sharing information. A communication channel provides for exchanging the messages from one individual to another (Rogers, 2003). Rogers refers to the concepts of homophily and heterophily in communication networks. "Homophily is the degree to which a pair of individuals who communicate are similar" (Rogers, 1995, p.286). Nicolle asserts that "the common belief and understanding between the individuals increase the likelihood that communication will be effective" (2005, p.18). As Valente (1995) stated, the homophilous communication can limit the expansion of an innovation to the individuals in the same network. Durrington, Repman, and Valente (2000) verified this finding in a study on a group of faculty's adoption of technology use which was hampered because of the lack of communication between friendship networks. However, heterophilous communication is not easy as homophilous

communication, because each network member's beliefs differ from others', but it is vital in diffusion in connecting heterogeneous individuals.

Time

Rogers says that the time dimension is composed of the innovation-decision process (1) by which an individual expresses its adoption or rejection for the first knowledge of innovation, the innovativeness of an individual or other unit of adoption (2), an innovation's rate of adoption system (3) generally measured as the number of innovation adopters in a given time period (2003, p. 20).

The innovation-decision process

Rogers defines this as

> the process through which an individual or other decision-making unit passes from first knowledge of an innovation to forming an attitude toward the innovation, to the decision to adopt or reject, to the implementation and use of new idea, and to the confirmation of this decision (2003, p.20).

He set forth five stages in the process:

1. Knowledge
2. Persuasion
3. Decision
4. Implementation
5. Confirmation

Knowledge is the first step in the innovation-decision process; that is the understanding of how it functions. *Persuasion* is the second step that shows attitude toward the innovation as either favorable or unfavorable. The next step is *Implementation*, or display action which means an individual starts to use this innovation. Mostly, re-invention occurs at this step. The fourth step is *Decision;* while engaging in innovation activities; individuals make decisions about adopting or rejecting the innovations. And the last step is *Confirmation* occurs when "an individual seeks reinforcement of an innovation-decision that has already been made, but he or she may reverse this previous decision if exposed to conflicting messages about the innovation" (Rogers, 2003, p.16).

Rogers (1995, p. 94) identifies eight major types of diffusion research; five of them are used to develop this study. These five types selected from his list are;

1. Rate of adoption of different innovations in a social system
2. Innovativeness
3. Diffusion networks
4. Communication channel use
5. Consequences of innovation

The Innovation – Decision Process model (Figure 2) describes the process of adopting innovations that happens over time. The five process stages are knowledge, persuasion, decision, implementation, and confirmation (Rogers, 1995).

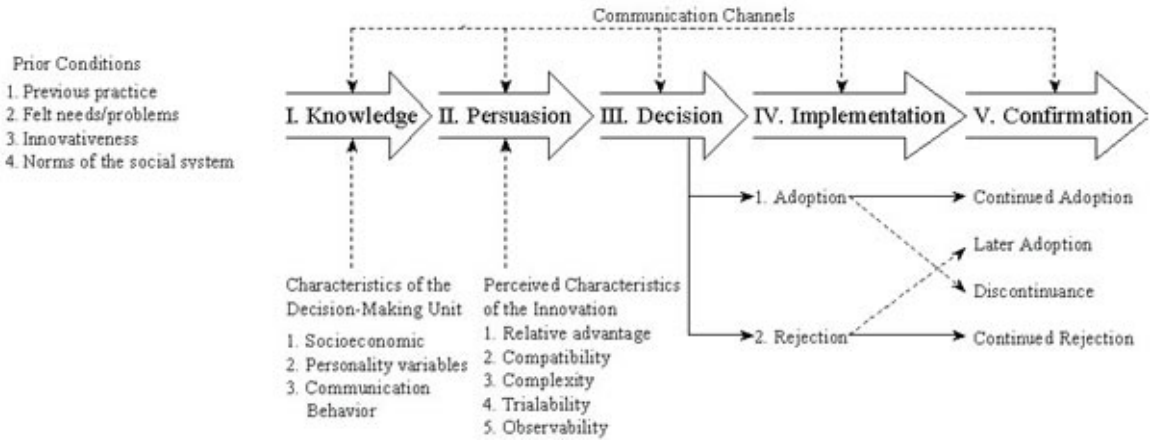

Figure 2. A model of stages in the innovation-decision process. (Rogers, 1995, p. 20)

The levels of innovation adopter categories are defined as innovators, early adopters, early majority, late majority, and laggards as shown in Figure 2 (Rogers, 1995, p. 22). The innovators and early adopters represent the people who are usually capable of working with their own initiative. The early majority and late majority people need an introduction to the innovation that promptly meets their immediate needs, in addition to showing proof of results (McKenzie, 1999, Padgett & Conceicao-Runlee, 2000). Laggards can be described basically as non-adopters (figure 3). Orr (2003) pointed out that the momentum of innovation is not weighed, or spread equally over the innovation-decision process. The discrepancy between early adopters and late adopters comes from an ambiguity which may exist in any changed decision. It can be said that the early adopters are risk-takers.

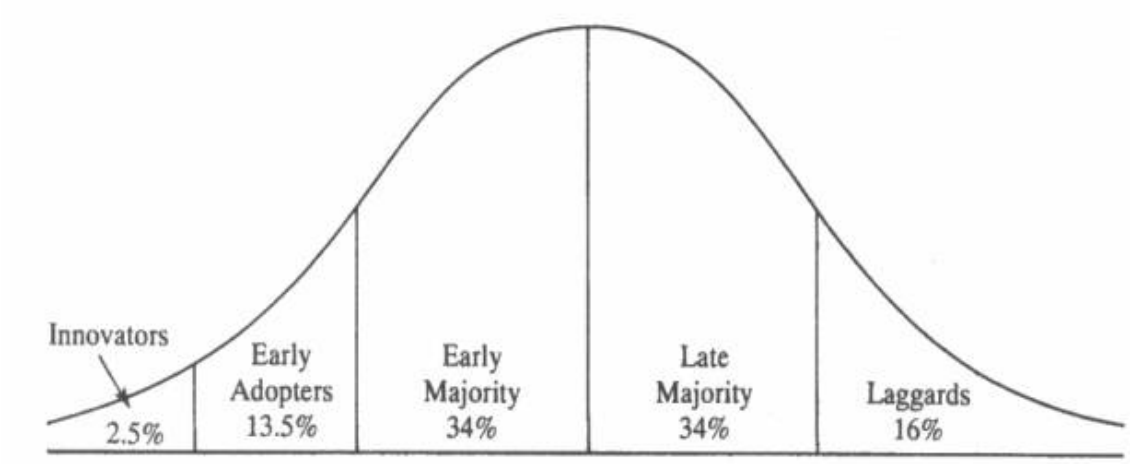

Figure 3. Adopter categorization on the basis of innovativeness. (Rogers, 1995, p. 262)

Valente and Rogers (1995) delineate four main aspects of diffusion:

1. The innovation-decision process
2. The roles of information sources or channels
3. The S-shaped cumulative rate of adoption
4. The personal, economic, and social characteristics of the various adopter categories.

Rogers (2004, p.19) asserted, the existence, as an aspect of the evolution of this diffusion model, of a focal point on networks "as a means of gaining further understanding of how a new idea spreads through interpersonal channels". Orr (2003) noted that the importance of understanding that each person makes his/her case to adopt an innovation; therefore, any member's innovation-decision depends on another member's innovation-decision. Yi et al, (2006) explained that in this theory, the decision stage involved two options. First, rejection of innovation leads sometimes to later adoption or to continuation of rejection. Second, adoption of innovation leads to

continued adoption or replacement. In the implementation stage, end users start to accept innovation. Finally, an affirmation of innovation happens in which personal users can evaluate the results of that innovation.

Other important aspects of this theory are result demonstrability, a concrete product as a result of innovation, and image, a belief that innovations foster one's image or status, are significant characteristics that influence user intention (Lundblad, 2003). There is significance of the interpersonal network on the adoption of innovations by a person. Valente (1995) asserted that the researching of diffusion of innovation may be examined by the social network of individuals. He argued that "diffusion is a communication process in which adopters persuade those who have not yet adopted to adopt" (p.2).

Diffusion or social networks exist on many levels within the TNP hierarchical organization. This research will try to reveal the importance of informal collegial groups and networks in the adoption of e-learning technology by TNP trainers and trainees. Valente (1995) approached "contagion" as a concept referring to an interpersonal process of "how individuals monitor others and imitate their behavior to adopt or not adopt innovations" (p.12). Rogers (1995) recommended that "we must understand the nature of networks if we are to understand fully the diffusion of innovations" (p.304). Valente further contributed to the idea to of relational diffusion networks that "direct contacts between individuals influence the spread of an innovation" (1995, p.31).

A Social System

Rogers defines a social system as “a set of interrelated units that are engaged in joint problem solving to accomplish a common goal” (2003, p.23) and a social system’s member or units may be composed of “individuals, informal groups, organizations, and/or subsystems” (Rogers, 2003, p.23). A social system has upper class companion groups or units come together to accomplish a common goal by solving problems. Facilitations or impediments of the diffusion of innovations in the system depend on the social and communication structure of the system. Rogers explains the relevant factors in how the system’s social structure affects diffusion as “the effect of norms on diffusion, the roles of opinion leaders and change agents, types of innovation-decisions, and the consequences of innovations (2003, p.24).

Rogers differentiates among three main types of innovation-decisions:

1. Optional innovation-decisions, individuals make choices independently from the other members to adopt or reject an innovation.
2. Collective innovation-decision, the members of a system make the decision anonymously to adopt or reject an innovation.
3. Authority innovation-decisions, a few individuals who have power, status, or technical expertise make a decision to adopt or reject an innovation.

Communities of Practice

Wenger (1998) explains that communities of practice provide an environment for the individuals to develop, negotiate, and share the practical, and to express the theoretical, ideals, reality, through talking and doing. Weiss (1997) asserts that police

rely on others' experiences as well as their own previous experiences and many police executives rely on informal communication channels to get information fast. However, not all police agencies are the same in their management practices or their practice of new strategy and technology adoption.

Weiss (1997) points out that the efforts of learning from the other police departments' experiences deliver similarities to solve problems. He states that some big-size police agencies in the US are have gained a reputation for their new innovations. These police agencies are trying to obtain public support by displaying their transparency and openness to improvements and innovations to serve them better (Weiss, 1997). Wenger and Snyder maintain that the communities of practices are an ideal forum to share and spread the best practices and serve as "the hidden fountainhead of knowledge development" (2000, p.145).

Moore (1999) re-designed Rogers (1995) adoption categories based on marketing and customer behavior. The main difference from Rogers's model is that there is no domino effect or no chain reaction between the categories- each comes after the previous one. Moore's adoption categories are:

1. Technology Enthusiasts (Innovators)
2. Visionaries (Early Adopters)
3. Pragmatists (Early Majority)
4. Conservatives (Late Majority)
5. Skeptics (Laggards)

There is a significant distinction between two groups of people; the first group are technology enthusiasts and visionaries and the second group are pragmatists and

conservatives in technology adoption. Moore (1999) describes this distinction as a chasm (as shown in Figure 4).

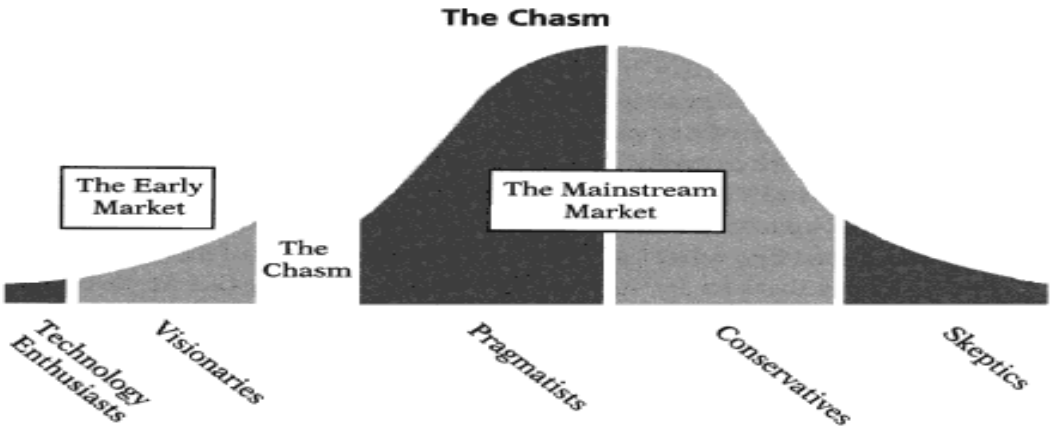

Figure 4. The chasm. (Moore, 1999)

In the law enforcement context, Weiss (1997) proposed a model to understand the communication of innovation among law enforcement agencies. Based on this model, the police innovation process has four elements (as shown in Figure 5):

1. Cosmopolitanism
2. Risk mediation
3. Peer emulation
4. Innovativeness (Weiss, 1997)

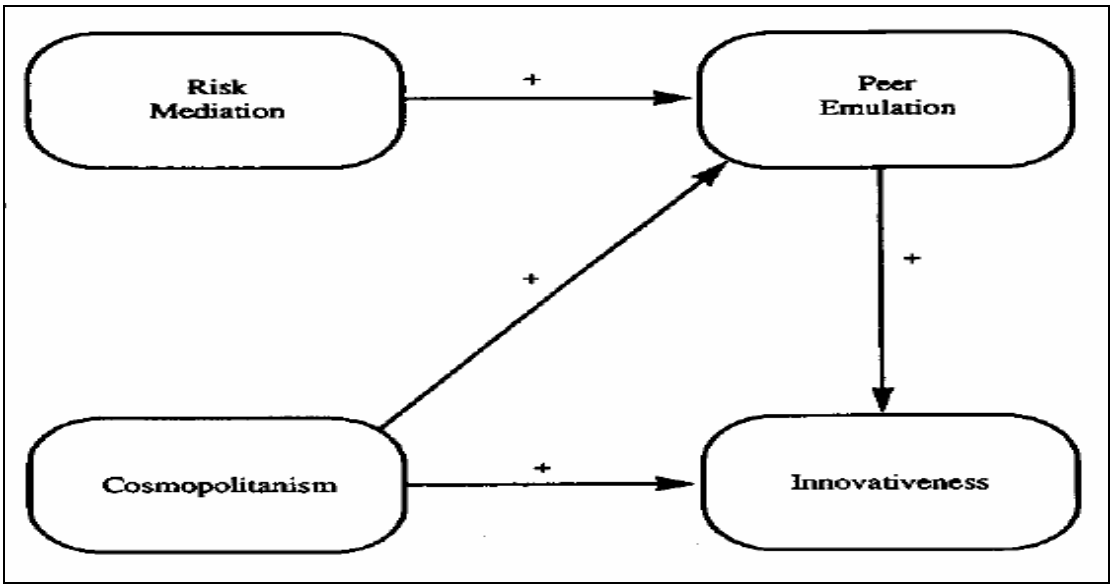

Figure 5. A model of the communication of innovation. (Weiss, 1997)

Weiss (1997; pp. 293-295) defines these four elements as follows:

- *Cosmopolitanism* is the searching of new ideas and innovations from other police agencies. Other police agencies or other social systems might have better systems and protocols to solve problems or to help the organizations better. There is a positive relationship with the degree of contact with other personnel or other agencies in the level of cosmopolitanism. The participation level in policy communities by people such as academics, consultants, publishers or editors of professional magazines and journals, business men and women, legislators and members of legislative staffs, elected officials, and lobbyists is another determinant of cosmopolitanism.

- *Risk mediation* is related to reducing the risk of civil liability in police agencies. According to the Police Foundation's survey, 100 police chiefs have recommended training and sound management practices to reduce liability cases (McCoy, 1987 as cited in Weiss, 1997). In research conducted by Nowicki, half of the surveyed police

chiefs approved training to lessen liability while the other half chose to interact with other police officials to solve liability concerns (Nowicki, 1987 as cited in Weiss, 1997).

- *Peer Emulation*; one of the most effective factors is imitation during the collaboration and communication in an innovation. Peer emulation and cosmopolitanism are distinct from one another in meaning and importance. Informal communication channels are used more frequently in peer emulation; it is a vital unit of police innovation process, because not only officers, but also managers want timely, accurate and reliable information to move fast (Weiss, 1997).

- *Innovativeness*; Rogers asserts that "opinion leaders are more innovative than their followers" (2003, p.318). He says that if an opinion leader wants to be recognized by peers as a capable and reliable expert about innovations, an opinion leader should adopt the ideas and innovations before the followers (Rogers, 2003). Weiss (1997) explains innovativeness in two parts: the objective component that shows the number of innovations that an organization has adopted, and the subjective component or the level of satisfaction among members about the reputation of organization.

Bass Diffusion Model

Another relevant model, developed by Frank Bass in 1969, describes the process of the adoption of new products or innovations and of the interactions between users and potential users for adopting an innovation or product (figure 6).

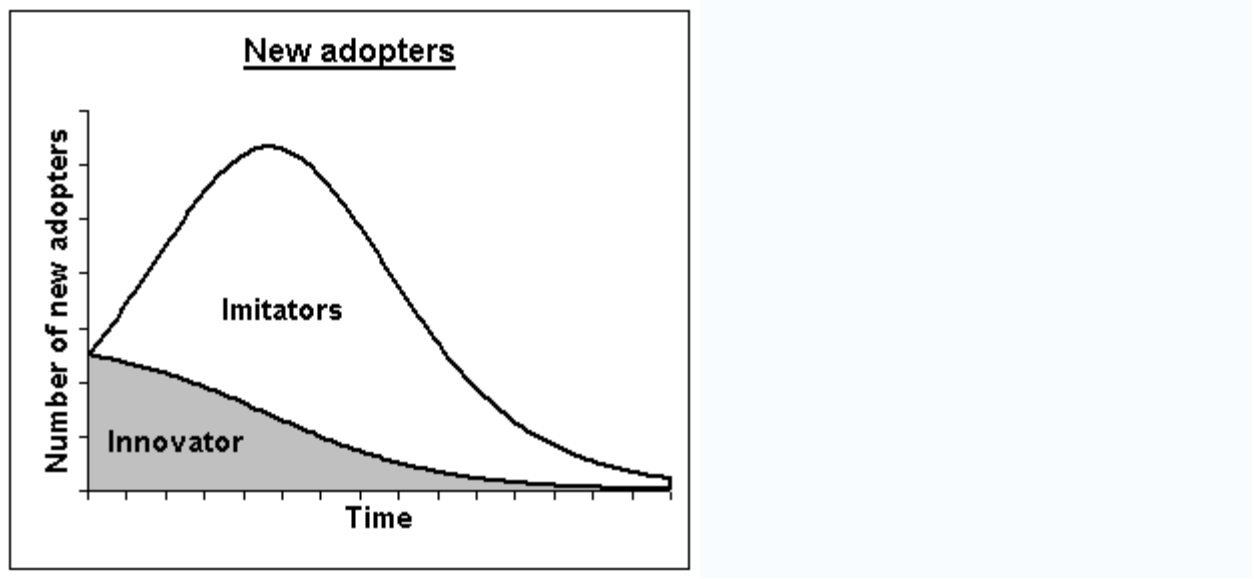

Figure 6. A model of the bass diffusion. (Bass, 1969)

This model has been widely used in marketing and management science and it has been very influential in product forecasting and technology forecasting. Before the Bass model, Rogers (1962) had published his *Diffusion of Innovations*; Bass (1969) made a contribution to the concept by using mathematical ideas. In this diffusion model, Bass used a Riccati equation with constant coefficients to mathematically describe the process (Bass, 1969).

Technology Acceptance and Integration Models

In this part, several models and theories related to technology acceptance will be explained. Many models have been developed for easy adoption and integration the new technology to improve teaching and learning environments.

Dooley (1999) created a holistic model for the diffusion of educational technologies. She pointed out difficulties and concerns about responding to changes

and innovations for teaching and learning purposes. Dooley's model tried to find answers to questions such as "Can innovation research help explain the adoption process in school?" and "How does the school context impact the change facilitation and implementation process?" (1999, p.1). This model describes how to deal with the concerns of teachers in the adoption of technology. Dooley developed this model based not only on Rogers' (1995) DOI, but also on the Concerns Based Adoption Model (Hall, Wallace, & Dossett, 1973) to explain ways of approaching the issues educators have about integrating technology into more traditional pedagogical practices.

Another useful model is Davis' TAM (1986). TAM is an information system to explain how users accept or reject an innovation of technology. Davis's model has been using widely by many disciplines, in 200 studies, and is referenced in many publications and technical reports (Ma & Liu, 2004). TAM posits that people tend to use an innovation if it has perceived usefulness and perceived ease of use of the technology, which are considered to be fundamental determinants of user acceptance. (Vankatesh & Davis, 2000). Davis (1999) found that ease of use and usefulness are positively interrelated with usage behavior in terms of self-reported current usage and self-predicted future usage.

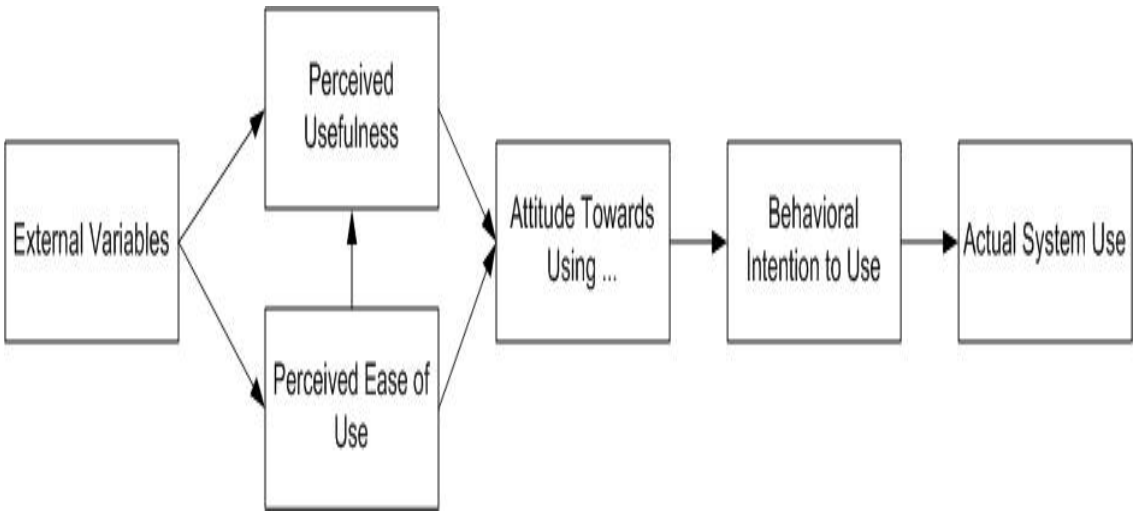

Figure 7. Graphical view of original TAM. (adapted from: Davis, Bagozzi, & Warshaw, 1989)

Davis asserted that perceived usefulness, “a belief that using the new system will increase the performance” and perceived ease of use “the degree to which a person believes that using a particular system would be effortless” (1999, p.320) are the two major components that influence the usage of these systems. Users define their attitude and acceptance levels themselves by aspects of individual behavioral intention to use the system. However, it should be cautioned that one limitation in this study was reliance on self-reporting than objective measurement.

Learning Theories

As mentioned in the Chapter 1, constructivism has been widely used as a teaching and learning theory. Constructivist approaches to learning are common in the type of learning environments within communities practice (Nicolle, 2005). Barab and Duffy developed their study based on situated learning and constructivism, and

explained that various application contexts may “draw on different references and clearly have specialized languages, actual interpretations of situativity and of constructivism share many underlying similarities” (2000, p.25). Lave and Wenger (1991) defined situated learning as an important investigation of learning as participation within communities of practice. In situated learning, participation and collaboration are thought to proceed from the boundary to the center. Therefore, learning is not seen just the receiving of knowledge by individuals, but rather as a process of social participation. The character of the situation influences considerably the process.

The term andragogy (from the Greek meaning adult-leading) is widely credited to Alexander Kapp (1833), and was further developed as a theoretical concept by Malcolm Knowles (1975). He emphasized that the idea of andragogy is specific and distinct and should be used to differentiate adult learning practices from pedagogy (child-leading) which is applied generally to all educational contexts. Knowles’ concept (1984) can be has four aspects;

1. Self-concept and motivation to learn; Knowles asserts that adults need to be part of the planning and evaluation in their education.
2. Experience; by using this experience adults can understand the foundation of learning activities.
3. Readiness to learn; adults can learn easily if the learning contents and materials relate to their job or personal life.
4. Orientation to learning; adult learning is problem oriented, not content-oriented.

Nicolle (2005) asserts that “the consideration that adults benefit from self-directed learning relates directly to the processes inherent to communities of practice” (p.24). She further suggests that “this potential form of professional development addresses the needs of adult learners and provides for the application” (p.24). These are all important aspects to examine when asking organizations of adults to adopt, adapt, and integrate new concepts or practices that will affect many facets of their daily routine and professional and personal contexts.

CHAPTER III

METHODOLOGY

> If you can't describe what you are doing as a process, you don't know what you're doing…If you can't measure it; you don't know what you are talking about.
>
> *Lord Kelvin*

Introduction

This focused study aims to investigate the beliefs and practices of TNP trainers and trainees toward the adoption and implementation process of e-learning technology for in-service police training. The researcher utilizes DOI (Rogers, 1995) and CTIPM (Nicolle, 2005) to find answers to the research questions. This study will provide guidance for decision makers about whether to adopt e-learning for in-service training for the TNP. If e-learning technology is chosen as a new method of training, this study will be useful in providing recommendations for each step of the process. This research is primarily an exploratory quantitative descriptive study; however, the survey includes an open-ended question which can be analyzed quantitatively. The researcher has had several positions as an officer in the TNP; this enabled insider perspectives and contacts, but every effort was made to assure objectivity.

To obtain information about using e-learning for in-service training by TNP trainers and trainees, two different surveys were administered. The methodology is presented in the following order: (a) Research Questions, (b) Research Design, (c) Target Population and Sampling Procedure, (d) Data Collection, (e) Limitations, (f) Instruments, (g) Pilot Study, (h) Data Analysis, (j) Summary.

Research Questions

The following research questions were generated from current research and actual practices related to e-learning. They have been tailored for the specific TNP in-service training context.

RQ1- What are the attitudes and perceptions of the TNP trainers towards adoption of e-learning technologies?

RQ2- What factors determine the TNP trainer's adaptation to e-learning technology?

a- TNP command structure support for e-learning

b- TNP resources for e-learning

c- Technology of delivery service

d- Trainer resistance and acceptance to e-learning technologies

e- Trainee resistance and acceptance to e-learning technologies

RQ3- Which factors facilitate adoption for trainers?

RQ4- Which factors facilitate adoption for trainees?

Research Design

Creswell (1994) argues that in quantitative studies, the researcher should derive questions from the theory or model; therefore, this study uses questions derived from the framework of DOI theory (Rogers, 1995) and CTIPM (Nicolle, 2005). The methodology of the research of the study involves qualitative and quantitative analyses based on an in-depth review of the literature. According to Morse and Richards (2002, pp. 15-16), to combine qualitative inquiry and analysis tasks, a researcher should

conduct a thorough literature review around the topic. The first section of this proposal demonstrates the breadth of knowledge from scholarly books and journals that the researcher has acquired.

To provide a holistic perspective of the issue, this research employed two different surveys for two different sample groups. To obtain a more accurate perspective of the applicability of using e-learning for in-service training, the beliefs and practices of both trainers and trainees must be studied. As Babbie (2001) says, qualitative research enables researchers "to recognize some of the more hidden aspects of social life. What people say is not always what they mean, and what they do may reveal their beliefs and feelings" (p.493). So researchers can use qualitative research "to look and listen for subtle nuances in human interactions . . . to understand people better" (Babbie, 2001, p.493) In this study, survey scale closed items and open ended questions are used to provide both qualitative and quantitative perspectives.

Target Population and Sampling and Census

This research targeted two different samples: TNP trainers and TNP trainees. According to TNP Personnel Department sources, the TNP has 170,000 members which include 14,000 ranked personnel and 156,000 non-ranked personnel. As mentioned in the first chapter, the TNP has a highly centralized organizational structure, and is directed by a General Director appointed by the Minister of Interior (Ozmen, 2006, p.95). To facilitate a more accurate understanding, the researcher has included the Ministry of Organizational Structure (Appendix L), and Structure and Organization of TNP (Appendix L). Ozmen says the TNP is largely based on the principle of integrated

police; therefore, all the functions of the police are controlled in one organization. Below table 1 presents the breakdown of TNP personnel by number, rank, and gender.

Table 1

Personnel Number by Rank and Gender in the TNP

RANK	FEMALE	MALE	TOTAL
The Director of TNP		1	1
Commissioner of First Degree	34	747	781
Commissioner of Second Degree	27	654	681
Commissioner of Third Degree	13	367	380
Commissioner of Fourth Degree	20	780	800
Superintendent	12	1,930	1,942
Chief Inspector	72	3,821	3,893
Inspector	163	2,504	2,667
Deputy Inspector	161	2,639	2,800
Police Officer	8,633	147,653	156,286
TOTAL	**9,135**	**161,096**	**170,231**

Trainers are ranking officers who are highly qualified and experienced in their fields. Some of the trainers are faculty members of the TNP Academy, which is the only accredited four-year college offering Bachelor and Master degree in criminal justice science in Turkey. In the trainer survey, the targeted responding group was 439 current trainers who worked as trainers in 2005. The researcher attempted to survey the entire trainer population using census procedure. Use of census survey minimizes sampling

errors; in addition, census surveying has many other advantages such as the data generally provide goof acceptance of results, the data for the entire population may be obtained, and the data does not require the use of complex theory to select a representative sample or to analyze results (Chanimal, 2006, p.7)

Trainees include both ranked and non-ranked police officers who are required to take in-service training courses. Since the TNP has a highly centralized structure, participants of the in-service training courses are randomly selected from different cities and departments for the various training sessions during the year. Naturally, reaching all members of the TNP (e.g., potential trainees) is nearly an impossible task. Therefore, the research targeted the members who are currently in these training programs. The researcher conducted surveys after the IRB approval (Appendix, B) in October, November, and December 2006. During this schedule, the total number of trainees was 620. Soliciting input from the most recent trainees will ensure that the information or the response is as up-to-date and relevant as possible. Therefore, the researcher used a non-probability convenience sampling procedure.

Data Collection

The nature of this study requires active collaboration with the Education Department of the TNP because the infrastructure of the TNP is such that all information regarding training must have prior approval before it is disseminated. The training process is planned and implemented by the Education Department. Hence, these surveys were administered by this department. The researcher contacted the head of the unit and gained approval for this project.

A description of the two possible methods of survey instrument completion was made available to participants in order to obtain more respondents. For their convenience, to ensure the highest possible participation rate, both a paper survey and online survey were made available, and individual respondents chose what they preferred. The self-administration technique (Babbie, 2001, p.253) in which respondents is asked to complete the surveys themselves was utilized to answer the questions. Babbie states that the most common form of self-administered questionnaires is the mail survey, but argues that computer technology for online surveys can add more flexibility to the survey process (2001).

The researcher designed the paper copy (Appendix A); additionally, the same questions were input into surveymonkey.com, a website that allows for designing and publishing custom online surveys. This website provides many options for the investigators, researchers, and designers, such as getting graphic representations and using the data for SPSS data analysis in real time. The TNP Education Department asked both trainers and trainees if they would prefer the paper copy. Some participants used the link to access the online survey. Additionally, the researcher emailed the trainers and trainees for whom an email address was available to encourage them to participate in the survey either through the link included in the email or by the hard copy from the Education Department.

The researcher did not ask for any identifying information from the respondents so as to ensure their anonymity. Additionally, due to the police subculture, it would be difficult for an outsider to obtain information from any member of the TNP; however, since the researcher is a member of the TNP, obtaining accurate information is likely.

To increase the proportion of the survey response, the researcher sent emails to the target population periodically to remind and encourage them to fill out the survey. Therefore, after the approval process of each fifteen days, the respondents had renewed emails. At the same time, the researcher periodically contacted the officers who carried out this project at the TNP Education Department.

The collected paper copies of the surveys were entered into the SPSS by the TNP Education Department. However, the researcher received both the written forms and the electronic data set. This gave the opportunity to double-check the accuracy of the electronic file. Following the initial data entrance procedure, the data were checked for various errors and prepared for analysis.

Limitations

Since the surveys were administered by a third party, the problems that may have taken place during that application may not be addressed by the researcher. Clearly, this is a limitation in the data collection process. Since the researcher is a current member of the TNP, acceptance and cooperation probably offset the problem of distance and third party administration of the survey. In fact, if the researcher had gone to conduct surveys personally, then privacy issues would have arisen, thus affecting the data gathering process in other ways.

Since all the trainers and trainees are full-time members of TNP, acquiring their names and contacts was conveniently handled through the TNP Education Department. As stated in the Data Collection section, the researcher contacted that department and obtained its permission prior to the initial stage of the process. (Appendix E)

Instruments

A survey is accepted as one of the most widely used data collection techniques in social sciences (Neuman, 2004). In this project, the research instrument for the qualitative and quantitative analyses comes from two types of surveys. The first survey instrument involves perceptions of TNP trainers. The second survey instrument involves questions prepared by the principal investigator of this research to explore the beliefs and practices of TNP trainees. The trainers' survey instrument is composed of 43 questions (Appendix A) and the second survey instrument is composed of 24 questions (Appendix A).

The trainers' survey contains seven categories. General Perspectives includes seven questions; Barriers to E-learning Technology Integration has six questions, Motivation for E-learning Technology Integration contains five questions; Goals for E-learning Technology Integration has five questions; Resources includes four questions; Implementation – Delivery includes seven questions; and the Results section has five questions, one open-ended question, and demographic information.

The trainee survey does not have any categories. Its format is the 23 items presented in the standard form of 5-point Likert-type scales questions, the one open-ended question, and the demographic information. Both surveys have a short explanation about the survey to help the respondents better understand the purpose and format and to prevent confusion. As mentioned before, these two surveys were converted into the online format using the surveymonkey.com website and were

conducted online by the researcher and face-to-face (in paper-copy format) by the TNP Education Department.

Since the respondents are from the TNP, the survey questions were prepared in English and also translated into Turkish. The researcher followed the process of Institutional Review Board (IRB) for international research, which is slightly different from national research. According to IRB international research (UNT, 2006), the investigator who will be conducting research internationally should provide the UNT IRB a copy of the local IRB or equivalent ethics committee approval. The researcher applied for and received this approval from the TNP Education Department. (Appendix E)

As mentioned in the Research Design section, survey questions were derived from DOI theory (Rogers, 1995) and adapted from Nicolle's (2005) CTIPM survey questions.

The questions in the surveys involve 5-point Likert-type scales, forced choice, and open ended responses such as

"I do not have enough personal technology skill to integrate e-learning technology in in-service training.

a) Strongly Disagree, b) Agree, c) Neutral, d) Disagree, e) Strongly Agree"

Pilot Study

According to Neuman (2004), "all social research requires planning and most quantitative researchers use pilot tests to avoid confusion, vagueness, and ambiguity" (p.211). The main goal of the pilot studies was to be sure that the survey instruments were understandable to the survey participants and that the internal consistency

reliabilities were satisfactory (Nicolle, 2005, p.67). After the pilot study, the researcher could be certain that the survey instruments were clear and understandable to the TNP trainers and trainees.

A face to face pretest of the instrument was not made by the researcher, due to the time and other practical limitations such as money and privacy. However, prior to the questionnaire being administered to the target respondents, a pilot group of five randomly selected trainers and five randomly selected trainees were emailed the online survey link after being approved by the TNP and the IRB approval process. The researcher already had many of the trainers' email addresses and was provided trainees' email addresses by the Education Department. The survey link was included in email.

When the respondents clicked on the survey link, the participants accessed to the online survey. For the trainers' survey, each section was on one web page. For the online version, the 5-point Likert scale items were listed, and radio buttons allowed the respondents to choose their answers. The respondents were provided the opportunity to go back using "Preview" button and to continue just clicking "Next" button. At the end of the survey, upon clicking the "done" button, the survey responses were submitted. For the trainees' survey, there was just one web page; the rest of the process was the same as for the trainers' survey.

Data Analysis

The data gathered in this study are analyzed using SPSS. In the next chapters, first, the demographic characteristics of the participants will be presented. Then, after

the basic description of the data set is given, further analyses such as factor analysis, correlation, regression, and/or other appropriate techniques conducted will be explained. The open-ended questions from both surveys will also be analyzed independently of the other questions, but responses will be compared to see if the open-ended responses represent the same trends identified by the statistical analyses. The results of these findings will be reported in the next chapters

The goal of this study is to develop a scale of interest in adopting e-learning technology for in-service training purposes. The researcher hopes to find correlation between the major factors listed in the questionnaires. That is, the institutional support, institutional resources, technology of service delivery, and the respondents' resistance and acceptance of e-learning technology are expected to affect the process of adaptation to e-learning technology for in-service police training. Furthermore, the researcher will explore whether the participants believe that e-learning would work for in-service police training.

CHAPTER IV

DATA ANALYSIS AND RESULTS

This study investigated the perceptions of TNP trainers and trainees towards the adoption and implementation process of e-learning technology for in-service police training. This chapter will present the findings resulting from the analyses. First, a discussion of the response rates and general demographics is presented. Then responses to the 43-item trainer survey will be reported, followed by the responses from the trainees to their 24- item survey. The third section will present and discuss the findings of factor analyses. Finally, the trainers' and trainees' overall responses will be compared.

Response Rate, Reliability and Validity of the Study

In this study, there are two different surveys. Of a possible 439 trainers, a total of 197 trainers responded to their version of the survey (of whom 5 participated in the pilot study). Thus, the total response rate was 44.8 % for both the trainers' pilot group and the study respondents to either the online or hard-copy format. Of a possible 620 trainees, a total of 238 trainees responded to their survey (of whom 5 participated in the pilot study). For the trainees, the total response rate was 38.3 % of trainee respondents to either the online or hard-copy format (including pilot and study respondents).

These response rates are considered to be very high when compared to online-survey-only response rates found in the literature. Historically, reported response rates are low, ranging between 13% and 34 % for online surveys (Carswell, 2001; Handwerk, Carson, & Blackwell, 2000; Wisan, Nazma, & Pscherer, 2001). Because of this low

response rate, the researcher of this study chose to use both the hard copy and online format. Two pilot studies, one for the trainers and one for the trainees, were administered on September 5, 2006; for each version, five participants agreed to take part in the survey.

Reliability and validity are essential for research, so in this study, as previously mentioned, two procedures were chosen to ensure the representativeness of the sampling. A census method was used for trainers whose total number was 439, so external validity is strong because of the large sample in terms of generalizability. For the trainees' survey, a non-probability convenience sampling procedure was used and reached 38.3 % of the research sample, an acceptably high percentage.

Demographic Data Findings and Analyses

The following eight tables (2-9) illustrate the distribution of the respondents and their gender, rank, education, and age.

Table 2

*Frequency Distribution of Respondents by Gender for Trainers (*N=*192)*

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	152	79.2	79.2	79.2
	Female	40	20.8	20.8	100.0
	Total	192	100.0	100.0	

Table 3

*Frequency Distribution of Respondents by Gender for Trainees (*N=*233)*

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	211	90.6	90.6	90.6
	Female	22	9.4	9.4	100.0
	Total	233	100.0	100.0	

As seen in these tables, the percentage of female respondents for both trainers (20.8) and trainees (9.4) is proportionately much higher than the current TNP female officer rate of 5.5 %. The higher trainer number is due to the fact that many of the trainers are civilian faculty members at institutes which historically have higher numbers of female faculties.

Table 4

Frequency Distribution of Trainers by Rank (N=192)

RANK for Trainers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Deputy Inspector	8	4.2	4.2	4.2
	Inspector	36	18.8	18.8	22.9
	Chief Inspector	44	22.9	22.9	45.8
	Superintendent	40	20.8	20.8	66.7
	Commissioner of Fourth Degree	8	4.2	4.2	70.8
	Commissioner of Third Degree	16	8.3	8.3	79.2
	Commissioner of Second Degree	8	4.2	4.2	83.3
	Faculty	32	16.7	16.7	100.0
	Total	192	100.0	100.0	

Table 4 indicates that mid-level ranked trainers, those holding the rank of Chief Inspector or Superintendent, are the largest number of respondents (*n*= 84). Additionally the fourth largest group of trainer respondents (*n*=32) were the faculty members who participated in this study. As mentioned before, the total number of possible trainers involved in the TNP Education Department is 439; a response from 192 trainers puts the overall response rate at 44%.

Table 5

Frequency Distribution of Trainees by Rank (N=233)

Rank for Trainees

		Frequency	Percent	Valid Percent	Cumulative Percent
Rank from low to high.	Police Officer	128	54.9	54.9	54.9
	Deputy Inspector	20	8.6	8.6	63.5
	Inspector	23	9.9	9.9	73.4
	Chief Inspector	27	11.6	11.6	85.0
	Superintendent	32	13.7	13.7	98.7
	Commissioner of Fourth Degree	2	.9	.9	99.6
	Commissioner of Second Degree	1	.4	.4	100.0
	Total	233	100.0	100.0	

It is clear that the majority of trainee respondents were police officers (*n*=128). The lowest response rate was from commissioners (*n*=3) indicating that in general those at the top of the hierarchy seem not to be involved in training issues. The table demonstrates that mid-level managers holding the rank of Chief Inspector or Superintendent (*n*=59) are the second largest segment of the group.

Table 6

Frequency Distribution of Trainers by Education Level (N=192)

Education Level for Trainers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Associate Degree	4	2.1	2.1	2.1
	Bachelors Degree	120	62.5	62.5	64.6
	Masters Degree	36	18.8	18.8	83.3
	Doctoral Degree	32	16.7	16.7	100.0
	Total	192	100.0	100.0	

Table 6 illustrates that while almost two-thirds (62.5 %) of the trainer respondents hold bachelors degrees, more than one-third (35.5 %) of trainer respondents hold masters and/or doctoral degrees.

Table 7

Frequency Distribution of Trainees by Education Level (N=233)

Education level for Trainees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Elementary School	5	2.1	2.1	2.1
	Middle School	6	2.6	2.6	4.7
	High School	52	22.3	22.3	27.0
	Associate Degree	57	24.5	24.5	51.5
	Bachelors Degree	58	24.9	24.9	76.4
	Masters Degree	41	17.6	17.6	94.0
	Doctoral Degree	14	6.0	6.0	100.0
	Total	233	100.0	100.0	

Table 7 shows that the educational level of trainee respondents is diverse. Although the current minimum educational requirement for becoming a police officer is a

high school diploma, the trainee respondents include some older personnel who have only elementary or middle-school education (*n*=11). However, the majority of trainee respondents (58.5%) hold at least a bachelors degree.

Table 8

Frequency Distribution of Trainers by Ages (N=192)

Age for Trainers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<30	32	16.7	16.7	16.7
	30-39	92	47.9	47.9	64.6
	40-49	68	35.4	35.4	100.0
	Total	192	100.0	100.0	

Table 8 illustrates that, as a whole, the trainers are young, under the age of 50. The majority are under 39 (65%).

Table 9

Frequency Distribution of Trainees by Ages (N=233)

Age for Trainees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<30	53	22.7	22.7	22.7
	30-39	144	61.8	61.8	84.5
	40-49	31	13.3	13.3	97.9
	50-59	5	2.1	2.1	100.0
	Total	233	100.0	100.0	

Table 9 illustrates that like the trainer respondents, the majority of trainee respondents are under 39 (84%). However, the trainees also include older employees, over the age of 50 (2%).

Because the research was concerned with the trainers' perceptions of their own relationship with technology, the survey specifically asked the trainers to identify the stage they would place themselves on the continuum of technology adoption. Table 10 shows that in the self-selection of a technology adoption stage, over one third of the respondents (33.9 %) felt they were in Stage 3. This stage reflects both a comprehension and a use of e-learning technology. A descriptive example of Stage 3 provided on the survey is "I use a variety of technology resources/tools in my preparation, instructional delivery, and evaluation. My students use a variety of technology resources/tools in the construction of curriculum-based products." In fact, almost 75% of the trainers placed themselves in the middle of the spectrum of e-learning technology (Stages 2-4).

Table 10

Trainers' Self-Selected Stages of E-Learning Adoption and Integration (N=192)

The stage that best describes where I am within the e-learning adoption and integration into police in-service training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Awareness	26	13.5	13.5	13.5
	Learning the Process	43	22.4	22.4	35.9
	Understanding and Applying the Process	65	33.9	33.9	69.8
	Creative Application to New Context	35	18.2	18.2	88.0
	Facilitating the Process	23	12.0	12.0	100.0
	Total	192	100.0	100.0	

Figure 8 displays the frequency of self-selected stages of e-learning examined in this survey. The purpose of this study is not to differentiate between categories of technology users; rather the intent is to focus on the stages that trainers perceive they must go through in order to adopt new e-learning technology. The curve represents the points at which the trainers feel they are starting from as they consider applying this technology to training for the TNP. The curve of this Histogram parallels strongly the theory suggested by Rogers (1995) for adopter categories (See Figure 3 in chapter 2). It should be noted that this type of self-selection represents a construct that is transitional in nature, and thus the choice of stages is subjective and fluid.

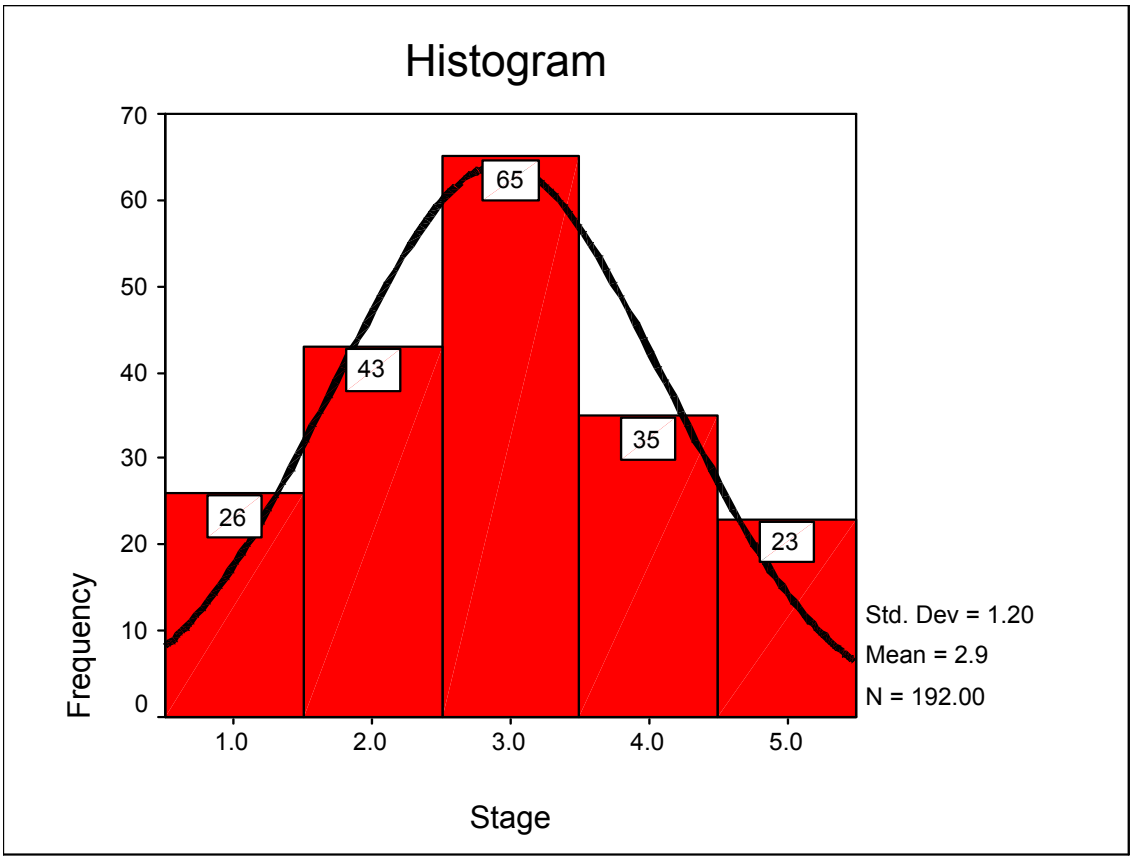

Figure 8. Distribution of trainers' self-selected stages of technology integration

Descriptive Statistics of Survey Data

Copies of both the Trainers and Trainees Survey Instruments are included in Appendix A. The 5-point Likert-type scale was: 1=Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree and 5= Strongly Agree. The researcher of the study provided the "Neutral" option to respondents to prevent a forced choice of other options. However, for the analysis, the "Neutral" category was removed to more clearly reveal the levels of agreement or disagreement. Thus, the means have all been calculated on a 4 point scale, so a mean of 3 or above indicates agreement. An Item mean is defined as "a mean close to the center of the range of possible scores" (DeVellis, 1991, p. 83). Table 11 contains the categories of items reflecting the different constructs being studied. The items will be presented first by category in terms of response and mean from the 4-point scale; then, each construct will be discussed based on the factor analysis of the relevant items.

Table 11

Means and Frequencies and Valid Percentages of Survey Indicators for Trainers

Questions		*M*	SD		Disagree		Agree		S A	
			n	%	*n*	%	*n*	%	*n*	%
1.General Perspectives	**a-**My knowledge and strategies of e-learning technology integration in in-service training would depend on institution-provided professional development.	3.06	11	6.1	29	16.1	78	43.3	62	34.4
	b-My knowledge and strategies of e-learning technology integration in in-service training would depend on informal collegial instruction or support.	2.49	20	12.8	56	35.9	64	41	16	10.3
	c-My knowledge and strategies of e-learning technology integration in in-service training would depend on self-taught.	3.11	1	0.5	35	19.4	88	48.9	56	31.1
	d-I believe that e-learning technology integration in in-service training will be very important for my students.	3.32	5	3	19	11.3	61	36.3	83	49.4
	e-My teaching philosophy reflects my beliefs that students learn most effectively through teacher-student interaction.	3.47	0		8	4.3	81	44	95	51.6
	f-My teaching philosophy reflects my beliefs that students learn most effectively through student-student interaction.	3.26	1	0.60	11	6.5	100	59.5	56	33.3
	g-My teaching philosophy reflects my beliefs that students learn most effectively when provided opportunities to interact with content and construct their own learning.	3.52	0		4	2.2	81	44	99	53.8
2. Barriers to E-learning Technology Integration	**a-**I do not have enough personal technology skill to integrate e-learning technology in in-service training.	2.93	4	2.4	44	26.2	79	47	41	24.4
	b- E-learning technology is considered too costly to implement.	2.08	48	30	64	40	36	22.5	12	7.5

(table continues)

Note: SD- Strongly Disagree, SA- Strongly Agree

Table 11 *(continued).*

Questions		*M*	SD		Disagree		Agree		S A	
			n	%	*n*	%	*n*	%	*n*	%
2. Barriers to E-learning Technology Integration *(continued)*	**c-** E-learning technology integration in in-service training will require too much of my class preparation time.	2.51	9	5.5	79	48.2	59	36	17	10.4
	d- E-learning technology integration will require too much time within course delivery.	2.33	11	6.4	105	61	44	25.6	12	7
	e- Using e-learning technology means to communicate with my students will require too much of my time.	2.43	13	9.6	67	49.3	40	29.4	16	11.8
	f- There are limited institutional professional development opportunities to learn about new technology at my organization.	2.17	11	7.1	40	25.6	84	53.8	21	13.5
	g- There will be little or no administrative support for the integration of e-learning technology in in-service training.	2.49	20	14.3	52	37.1	48	34.3	20	14.3
3.Motivation for E-learning Technology Integration	**a-** E-learning technology integration will benefit my students.	3.27	4	2.5	8	5	89	55.6	59	36.9
	b-I see e-learning technology in in-service training as a welcome challenge.	3.51	0		8	4.2	73	40.6	99	55
	c-I believe that using e-learning technology is an inevitable educational trend.	3.59	0		4	2.3	64	36.4	108	61.4
	d-I believe that I will receive administrative support to use e-learning technology in in-service training.	3.33	4	2.5	4	2.5	87	54.4	65	40.6
	e-I believe that e-learning technology integration in in-service training will be accepted among my peers.	3.1	0		36	22	75	45.7	53	32.3
4.Goals for E-learning Technology Integration	**a-** If I use e-learning technology, I will be able to present more complex work to my students.	3.09	8	4.7	12	7	108	62.8	44	25.6
	b-If I use e-learning technology, I expect an increased level of collaboration among my students.	2.79	8	5.3	40	26.3	80	52.6	24	15.8

(table continues)

Note: SD- Strongly Disagree, SA- Strongly Agree

Table 11 *(continued).*

Questions		*M*	SD		Disagree		Agree		S A	
			n	%	*n*	%	*n*	%	*n*	%
4.Goals for E-learning Technology Integration *(continued)*	**c-** If I use e-learning technology, I will spend more time preparing materials and resources for instruction.	2.95	0		44	25	96	54.4	36	30.5
	d- If I use e-learning technology, my students will show improvement in learning tasks, such as analyzing data, or solving problems.	3.18	0		12	7.5	108	67.5	40	20
	e-If I use e-learning technology, my interaction with students will increase.	3.03	8	5.4	20	13.5	80	54.1	40	27
5.Resources	**a-**I have sufficient knowledge of a range of e-learning technology resources for effective in-service training.	2.63	16	9.8	56	34.1	64	39	28	17.1
	b- It is generally easy to obtain the resources I need for e-learning technology integration.	2.93	0		40	25	92	57.5	28	17.5
	c-My department should provide access to instructional technology support.	3.29	0		12	6.7	104	57.8	64	35.6
	d-I would participate more in technical or technology integration training, if it was available.	3.6	4	2.1	4	2.1	56	29.8	124	66
6.Implementation – Delivery	**a-**I would use technology enhanced presentations (e.g., PowerPoint) as a strategy for my class delivery.	3.36	4	2.1	20	10.6	68	36.2	96	51.1
	b-I would use general multimedia technology tools (e.g., audio, video) within my presentations during my class delivery.	3.36	0		24	12.8	72	38.3	92	48.9
	c-I would use content-specific Internet resources (e.g. multimedia, databases) within my presentations during my class delivery.	3.35	0		12	7%	88	51.2	72	41.9
	d-I would require the use of general multimedia technology tools (e.g., audio, video) by my students.	3.48	0		4	2.2	88	47.8	92	50

(table continues)

Note: SD- Strongly Disagree, SA- Strongly Agree

Table 11 *(continued).*

Questions		*M*	SD		Disagree		Agree		S A	
			n	%	*n*	%	*n*	%	*n*	%
6.Implementation – Delivery *(continued)*	**e-**I would require the use of content-specific Internet resources (e.g., sites, databases, and journal) within my discipline area by my students.	3.41	0		4	2.2	100	54.3	80	43.5
	f-I would require the use of online communication (e.g., email, chat, instant messaging) by my students to foster group collaboration in learning group discussion.	3.38	0		0		112	62.2	68	37.8
	g- Using e-learning technology in in-service training would encourage more student centered learning.	3.41	0		12	7.3	72	43.9	80	48.8
7.Results	**a-**I believe that if I have institutional support I can easily adopt e-learning technology in in-service training.	3.52	0		4	2.3	76	43.2	96	54.5
	b-I believe that a department would be needed to help me digitize my course content.	3.13	4	2.2	16	8.9	112	62.2	48	26.7
	c-I believe that a help desk (24/7) would be needed to help me and my students resolve technical problems.	3.33	0		8	5.6	80	55.6	56	38.9
	d-I believe that a department would be needed to provide me and my students' technical training for easy integration of e-learning.	3.39	4	2.3	0		96	54.5	76	43.2
	e-I believe that using e-learning technology for in-service training would have a positive effect on student learning.	3.3	0		4	2.3	112	65.1	56	32.6
	f-I believe that e-learning would benefit TNP in-service training.	3.4	0		4	2.2	100	55.6	76	42.2
	g-With the right tool e-learning would benefit TNP training.	3.42	0		4	2.2	96	53.3	80	44.4

Note: SD- Strongly Disagree, SA- Strongly Agree

Table 12

Means and Frequencies and Valid Percentages of Survey Indicators for Trainees

Questions	*M*	SD		Disagree		Agree		S A	
		n	%	*n*	%	*n*	%	*n*	%
1. I personally do not have enough technological skills to participate in e-learning for in-service training.	2.4	62	30.5	46	22.7	51	25.1	44	21.7
2. My knowledge and technological skills to participate in e-learning for in-service training would depend on institution-provided professional development.	2.9	28	12.9	34	15.7	97	44.7	58	26.7
3. I believe that to use e-learning technology in in-service training effectively, a help-desk should be available 24/7 to solve any technology related problems.	3.1	12	5.9	26	12.7	83	40.5	83	40.5
4. I believe that e-learning technology integration in in-service training will be very useful for me.	3	19	9.3	30	14.7	87	42.6	68	33.3
5. I believe that after if e-learning technology were integrating in in-service training more courses could be made available.	3.2	15	7.3	19	9.2	76	36.9	96	46.6
6. I believe that if e-learning technology were integrated in in-service training, I might attend more training programs.	3.2	14	6.9	25	12.4	79	39.1	84	41.6
7. E-learning technology integration in in-service training would require too much effort and time from me.	2.6	21	11.7	54	34	77	42.8	28	15.6
8. I believe that e-learning technology integration would require an internet connection.	2.9	0		40	17.2	169	72.5	24	10.3
9. I do not have access to the internet.	2.3	80	36.9	38	17.5	49	22.6	50	23
10. Using e-learning technology to communicate with my course mates will require too much of my time.	2.5	34	17.7	68	35.4	55	28.6	35	18.2
11. There would be limited institutional professional development opportunities to learn about new technology at my organization.	2.7	19	10.7	53	29.8	78	43.8	28	15.7
12. There would be little or no administrative support for the integration of e-learning technology in in-service training.	2.7	24	12.2	67	34	74	37.6	32	16.2
13. I would see e-learning technology in in-service training as a welcome challenge.	3.3	15	7.3	12	5.8	83	40.3	96	46.6

(table continues)

Table 12 *(continued).*

Questions		*M*	SD		Disagree		Agree		S A	
			n	%	*n*	%	*n*	%	*n*	%
14.	I believe that using e-learning technology is an inevitable educational trend.	3	15	7.6	30	15.2	84	42.6	67	34
15.	I believe that I would receive administrative support to use e-learning technology in in-service training.	2.6	26	15.8	45	27.3	67	40.6	27	16.4
16.	I believe that e-learning technology integration in in-service training would be accepted among my colleagues.	2.8	21	12.8	25	15.2	84	51.2	34	20.7
17.	If I use e-learning technology, my interaction with course mates would increase.	2.4	36	20.3	63	35.6	58	32.8	20	11.3
18.	I believe that if I had institutional support I could easily adopt the e-learning technology in in-service training.	3.1	10	5.2	26	13.5	102	52.8	55	28.5
19.	I believe that a help desk (7/24) would be needed to help me resolve technical problems.	3.1	11	5.3	18	8.7	110	52.9	69	33.2
20.	I believe that a department would be needed to provide me technical training for easy integration of e-learning.	3.2	8	3.8	18	8.5	119	56.1	67	31.6
21.	I believe that using e-learning technology in in-service training would have a positive effect on student learning.	3	11	5.6	28	14.2	104	52.8	54	27.4
22.	I believe that using e-learning technology in in-service training would have a positive effect on student interaction with other students.	2.6	25	13.7	52	28.4	80	43.7	26	14.2
23.	I believe that e-learning would benefit TNP in-service training.	3	19	9.1	20	9.6	115	55.3	54	26
24.	With the right tool e-learning would benefit TNP training.	3.3	8	3.7	15	7	93	43.5	98	45.8

Overview of Trainers' Survey Results

General Perspectives

From the Trainers' survey, the "General Perspectives" section results indicate that the trainers have a positive approach to using e-learning technology, but their responses to item 1b (*M*=2.49) show that their knowledge does not strongly depend on getting casual help from their peers; instead, they would rely more on professional development (1a *M*=3.06) or themselves (1c *M*=3.11) for e-learning information and techniques (see Table 11).

The trainers' responses to items 1d, q1e, 1f, and 1g (*Ms*>3.1) indicate that the trainers believe very strongly in the importance of e-learning technology for their students, and that their instructional practices foster the relationship between technology and learning to emphasize that importance.

Barriers to E-learning Technology Integration

For the "Barriers to E-learning Technology Integration" section, trainers perceived that e-learning technology is affordable, and that the TNP will provide chances to learn about e-learning technology; they are less sure about the ongoing support of integrating technology, but agree that they do not have enough individual knowledge to do it themselves (see Table 11). They perceived the technology might also require too much time for preparation and communication. However, they do not think that e-learning technology is too costly to implement (70%).

Motivation for E-learning Technology Integration

Indicators on the Motivation scale resulted in a high level of agreement for the statement “I believe that using e-learning technology is inevitable educational trend.” With a mean score of 3.59, there appears to be a strong consensus for using e-learning technology (see Table 11). More than 90% of the trainers are in agreement that e-learning technology integration will benefit their students. Moreover, over 95 % of trainees also believe that e-learning would benefit for in-service training (see Table 12). Approximately 77% of trainers stated that “I believe that e-learning technology integration in in-service training will be accepted among my peers.”

Goals for E-learning Technology Integration

Responses in the “Goals for E-learning Technology Integration” section indicate that over 70% of the trainers believe that using this new technology would improve students’ “learning tasks, such as analyzing data, or solving problems.” Around 70% of the trainers perceived that this integration would increase levels of collaboration among their students (see Table 11).

Resources

The “Resources” section responses show that trainers need institutional resources to adopt new technology; “my department should provide access to instructional technology support” is one of the highest mean scores (*M*= 3.29). Almost all of the trainers (96%) are eager to participate in technology integration training programs (see Table 11).

Implementation and Delivery

Trainers would like to use technology-enhanced presentations, multimedia technology tools, internet resources, and online communication tools. The "Implementation-Delivery" responses reveal that trainers are positively slanted to this new technology, as the average of this section's mean is more than 3.38 (see Table 11).

Results

The summary section called "Results" illustrates that overwhelmingly, the trainers believe that before integrating the technology; they need institutional support (98%), as well as institutional resources such as a unit to digitize their course content, a help desk unit for technical problems, and technical training (see Table 11). This section summarizes the trainers' general acceptance of integrating the technology; the majority, (98%), agrees that "using e-learning technology for in-service training would have positive effect on student learning." Almost all of the trainers are in agreement that if e-learning technology is used with the right tool, it would benefit TNP training.

Overview of Trainees' Survey Results

As are the trainers, the majority of the trainees (89%) are also in agreement that if e-learning technology is used with the right tool, it would benefit TNP training (see Table 12). And that same percent of trainees feel that if they had "institutional support they could easily adopt the e-learning technology in in-service training." Over 50% of the trainees believe that they have enough technological skills to participate in e-learning for

in-service training. However, they also perceive the need for the availability of administratively mandated technical support; at one of the highest levels of agreement in needs is that of a help-desk unit (more than 90%). Two-thirds of the trainees believe that using this technology will be very useful for in-service training and over four-fifths of them feel that with the new technology, they would attend more training programs. On the other hand, slightly more than half of the trainees (55%) are concerned that the new system would require too much effort and time from them. More than half of the trainees indicate that they have internet access at home or office; and over 55% of the trainees believe that they will receive administrative support to use e-learning technology for in-service training. Two-thirds of the trainees agree that using e-learning technology is an inevitable educational trend. They also believe that e-learning technology integration in in-service training would be accepted among their colleagues. Clearly, the majority of the trainees believe that e-learning would benefit the TNP in-service training program.

Factor Analysis

It is necessary to state that this research is primarily an exploratory quantitative descriptive study; however, both of the surveys include open-ended questions which were analyzed qualitatively, and are presented Chapter 5. This section presents the results of the factor analyses of the scale items and also reveals the outcome of the research in terms of a discussion of the identified factors.

Because of the complexity of human behavior, multiple variables may be collected and identified to explain the intricacies and interconnections of social relations. For this reason, factor analysis is a useful tool to examine the wide ranging categories

in organized data sets. In the process of factor analysis, the latent dimensions of a set of variables are revealed by reducing a large set of data into a smaller number of factors. Factor analysis is useful for examining the correlations among a large number of interrelated quantitative variables by organizing the many, individual related variables into a few groups (factors). After grouping, the interpretation is facilitated. That is, it is clear which variables within each factor are more highly correlated with variables in that factor than with variables in other factors (Blaikie, 2003, p. 220). Therefore, factor analysis is a beneficial statistical tool to classify or reduce data, illuminate causal links, transform data, and define relationships.

In this study, the survey responses contained missing data; an average score for the items answered was assigned to the missing responses as suggested in the literature.

If a large number of respondents fail to answer a particular item, then that item should be eliminated from a scale. If the missing item is one of a series of measures of the same basic dimension, we could assign to that item the average score for the items answered. Another alternative to substituting the average score from the items answered is to assign an intermediate score to missing responses (Hagan, 2000, p.308).

As previously mentioned, in this study two different surveys were conducted. Thus, two factor analyses resulted, one for the trainers' responses and one for the trainees' responses. For the trainers' factor analysis, out of the 43 total questions, the 42 rated items were extracted to construct a scale by using SPSS. For the trainees'

factor analysis, out of the 25 total questions, the 24 rated items were extracted to construct a scale.

In order to measure the relevant research constructs, or hypothetical variables (Hatcher, 1994), an index of reliability was used. Cronbach's alpha is the index of reliability associated with the variation accounted for by the true score of the "underlying construct" (Reynaldo & Santos, 1999). The mean values and Coefficient alpha values of the items are shown in the following table.

Table 13

Item Means - Variance Summary Item Statistics for Trainees

	Mean	Minimum	Maximum	Range	Max/Min	Variance	N of Items
Item Means	3.4784	2.7851	4.1009	1.3158	1.4724	0.1741	24

The covariance matrix is calculated and used in the analysis.

Scale Statistics

Mean	Variance	Std Dev	N of Items
83.4825	233.3257	15.275	24

Coefficient alpha values for each item are illustrated in the following table.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.8	0.8939	24

Table 14

Item Means - Variances Summary Item Statistics for Trainers

	Mean	Minimum	Maximum	Range	Max/Min	Variance
Item Means	3.8468	2.4792	4.5208	2.0417	1.8235	0.2871

The covariance matrix is calculated and used in the analysis.

Scale Statistics

Mean	Variance	Std Dev	N of Items
157.7188	660.1927	25.6942	41

Coefficient alpha values for each item are illustrated in the following table.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
0.9687	0.9702	41

The reliability of this research, as shown in the above tables, is at an acceptable value.

The following part presents the results acquired by the factor analysis method. According to trainers' data analysis, there are five factors: Factor I: Motivation and Implementation for E-learning Integration, Factor II: Institutional Resources and Support, III: Perceptions and Needs of E-learning, Factor IV: Interactive Communication and Factor V: Required Support for E-learning Integration. Based on the trainees' data analysis, there are three factors: Factor I: Institutional support and resources for easy

integration and benefits of e-learning, Factor II: Implications of E-learning, Factor III: Concerns about E-learning integration.

The analysis reveals that 42 items are loaded to 5 factors (See APPENDIX H Rotated Component Matrix for trainers). For the trainees' factor analysis, 23 items were loaded following the same process as the trainers' factor analysis. Trainee item analysis illustrates that 23 items are grouped around 3 factors (See APPENDIX I Rotated Component Matrix for Trainees).

Rotation and Interpretation of Output

To address the strengths of the intercorrelations among the items, the literature recommends an inspection of the correlation matrix for evidence of coefficients greater than .3. If few correlations above this level are found, then factor analysis may not be appropriate. (Blaikie, 2003: 220). Two statistical measures are generated by SPSS to help assess the factorability of the data: Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. The outcome of Bartlett's test of sphericity should be significant ($p<.05$; that is, the significant value should be .05 or smaller) for the factor analysis to be considered appropriate. The KMO index ranges from 0 to 1, with .6 suggested as the minimum value for a good factor analysis.

As seen in Table 15, both the Trainer and Trainee KMO and Bartlett's Tests were assessed. The KMO value is more than .6 (.716, .733), and the Bartlett's test is significant ($p=.000$); therefore, factor analysis is an appropriate measure for this research study. (Appendix F and Appendix G)

Table 15

Summary of the Trainers' KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.716
Bartlett's Test of Sphericity	Approx. Chi-Square	5640.115
	df	861
	Sig.	.000

Summary of the Trainees' KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.733
Bartlett's Test of Sphericity	Approx. Chi-Square	1172.163
	df	276
	Sig.	.000

To determine how many components (factors) to "extract", information provided in the output needs to be considered. Using Kaiser's criterion, the analysis is interested in components that have an eigenvalue of 1 or more. To determine how many components meet this criterion, the total variance needs to be examined. As seen in Table 16, the first 9 components displayed eigenvalues above 1 from the Trainer's data.

Table 16

Summary of the Trainers' Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	18.763	44.673	44.673	18.763	44.673	44.673
2	3.411	8.122	52.795	3.411	8.122	52.795
3	2.530	6.024	58.819	2.530	6.024	58.819
4	1.922	4.577	63.396	1.922	4.577	63.396
5	1.792	4.267	67.663	1.792	4.267	67.663
6	1.656	3.942	71.605			
7	1.477	3.516	75.121			
8	1.375	3.273	78.394			
9	1.150	2.738	81.132			

Extraction Method: Principal Component Analysis.

In the responses generated by the trainers, because many components were extracted, it is important to also look at the screeplot provided by SPSS for a change (or elbow) in the shape of the plot. Although 9 factors emerged with eigenvalues above 1.0, in this screeplot, there is quite a clear break in the first component explaining much

more of the variance than the remaining components (44.673%). Moreover, components 2, 3, 4, 5 capture more variance than do other components. From this plot, because of their high eigenvalues, it is beneficial to retain only the first five components. These five factors accounted for 67.663 percent of the total variance among the 43 items (see Table 16).

In the trainee generated responses, several components were extracted and the screeplot was examined for plot changes. Five factors emerged from the trainee data with eigenvalues above 1.0, a clear elbow can be seen in the first component which explains 54.3 % of the variance.

Table 17

Summary of the Trainees' Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	13.055	54.396	54.396	13.055	54.396	54.396
2	2.515	10.479	64.875	2.515	10.479	64.875
3	1.572	6.550	71.425	1.572	6.550	71.425
4	1.207	5.031	76.455			
5	1.035	4.314	80.769			
6	.225	.937	97.375			
7	.152	.633	98.008			

8	.120	.500	98.508			

Each of the remaining components accounts for no more than 5% of the variance. From the first factor analysis, the first five of twenty seven were retained. After further analysis, factors 4 and 5 each had just one component, and thus were eliminated because a factor must have more than one component related to it.

Factor Rotation and Interpretation of Output

Vectors were rotated to clarify the factor solution. Table 17 presents the Initial Eigenvalues and Rotation Sums of Squared Loadings of the five components after factor rotation resulting from trainers' responses. The final rotated factor matrix of five factors and 42 items were obtained by means of rotation analysis (see Appendix H). Although, rotation analysis did have a strengthening effect on some variables, making them load stronger to a certain factor, and weakened other loadings, the five factors remained related. Thus, the rotation analysis was useful for more accurately interpreting the correlation between the variables and individual factors by showing their relationships.

The same process was used on the three factors resulting from trainees' responses. Again, though rotation analysis did have a strengthening effect on some variables, making them load stronger to a certain factor and weakened other loadings, the three factors remained related. Thus, the rotation analysis was also useful for more accurately interpreting the correlation between the trainee variables and individual factors by showing their relationships.

Correlations in a factor analysis may range from +1 to -1. This range and their signs stand for the strength and direction of a relationship between two variables.

Correlations with respect to Initial Eigenvalues and Rotation Sums of Squared Loadings of the five components after factor rotation are found in Appendix H.

The 42 items of the Trainers' Survey and 24 items of the Trainees' were subjected to principal components analysis (PCA) using SPSS. Prior to performing PCA the suitability of the data for factorability was assessed. Inspection of the correlation matrix revealed that the presence of many coefficients of .3 and above. The Kaiser-Meyer-Oklin value was .716 for Trainer's data and .733 for Trainee's data, exceeding the recommended value of .6 (Dunteman, 1989), and the Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix.

Principal components for trainer's data analysis revealed the presence of twenty seven components with eigenvalues exceeding 1, but the first five components capture more variance explaining 44.6 %, 8.1 %, 6.02 %, 4.5 %, and 4.2 % of the variance, respectively. An inspection of the screeplot revealed a clear break in the first component explaining much more of the variance (44.6%) than the remaining components. In this context, because of their high eigenvalues, it was decided to retain the first five components for further investigation. After the same process for trainee's data analysis revealed that the presence of five components with eigenvalues exceeding 1, but the first three components capture more variance that explaining 54.3%, 10.4%, 6.55% of the variance, respectively.

The factors and indicators loading to these factors are listed for **Trainers** as follows:

Factor 1: Motivation and Implementation for E-learning Integration

Motivation,

Implementation,

Factor 2: Institutional Resources and Support

Institutional Resources

Support required for success

Factor 3: Perceptions and Needs of E-learning

Perceptions about E-learning

Institutional and Technical Support

Factor 4: Interactive Communication

Trainer philosophy of interaction

Individual support needs

Factor 5: Required Support for E-learning Integration

To extract the factor loadings, the principal component analysis with rotation method involving Varimax with Kaiser normalization is used. The following section includes the illustration of the factor analysis and the modifications carried out by the researcher along with explanations. The theoretical illustration of the factors and their loading are presented in the next section.

- *Factor 1- Motivation and Implementation for E-learning Integration*

As shown in Figure 10, factor 1 seems to suggest two interrelated concepts, motivation and implementation. Under the construct of motivation, the strongest related item is that of the belief in inevitability of e-learning as an accepted option for educational content delivery. A second strong item is the trainers' positive outlook to trying the new technological option in teaching context. The second construct in factor 1,

implementation, includes the strong loading item of Power Point as a mode for course content delivery as well as other multimedia within the course context.

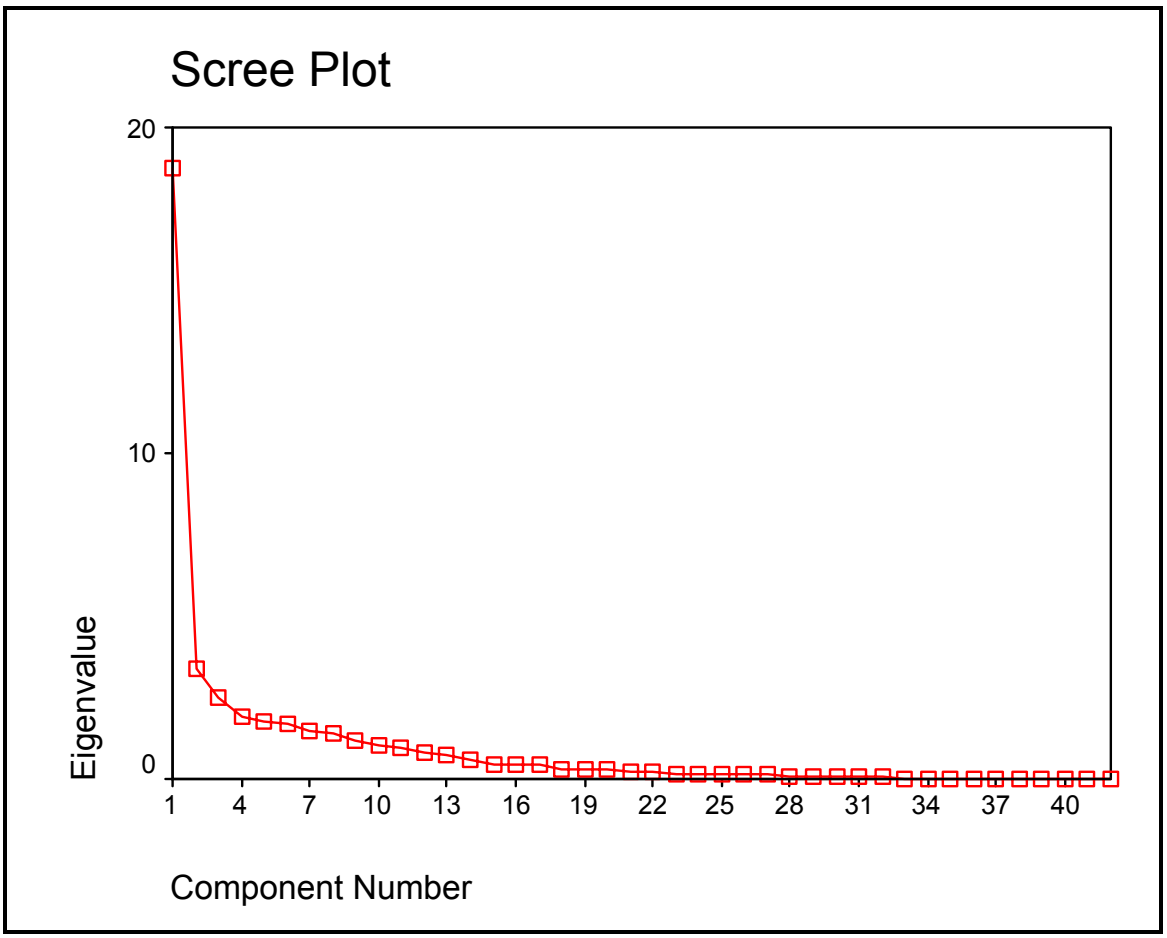

Figure 9. Screeplot for trainers' survey.

The indicators “inevitable educational trend”, “welcome challenge”, “self-taught”, “institutional support”, “benefits for students”, “students improvement in learning tasks” and the indicators “encourage more student centered learning”, load to the “motivation and implementation for e-learning integration” under the concept of “motivation”. The indicators, “using Power-Point presentations”, “using general multimedia technology”, “provide more complex work to the students”, “using content-specific Internet resources”, “sufficient knowledge” and “more time preparing course materials” load to

the “motivation and implementation for e-learning integration” under the concept of “implementation”.

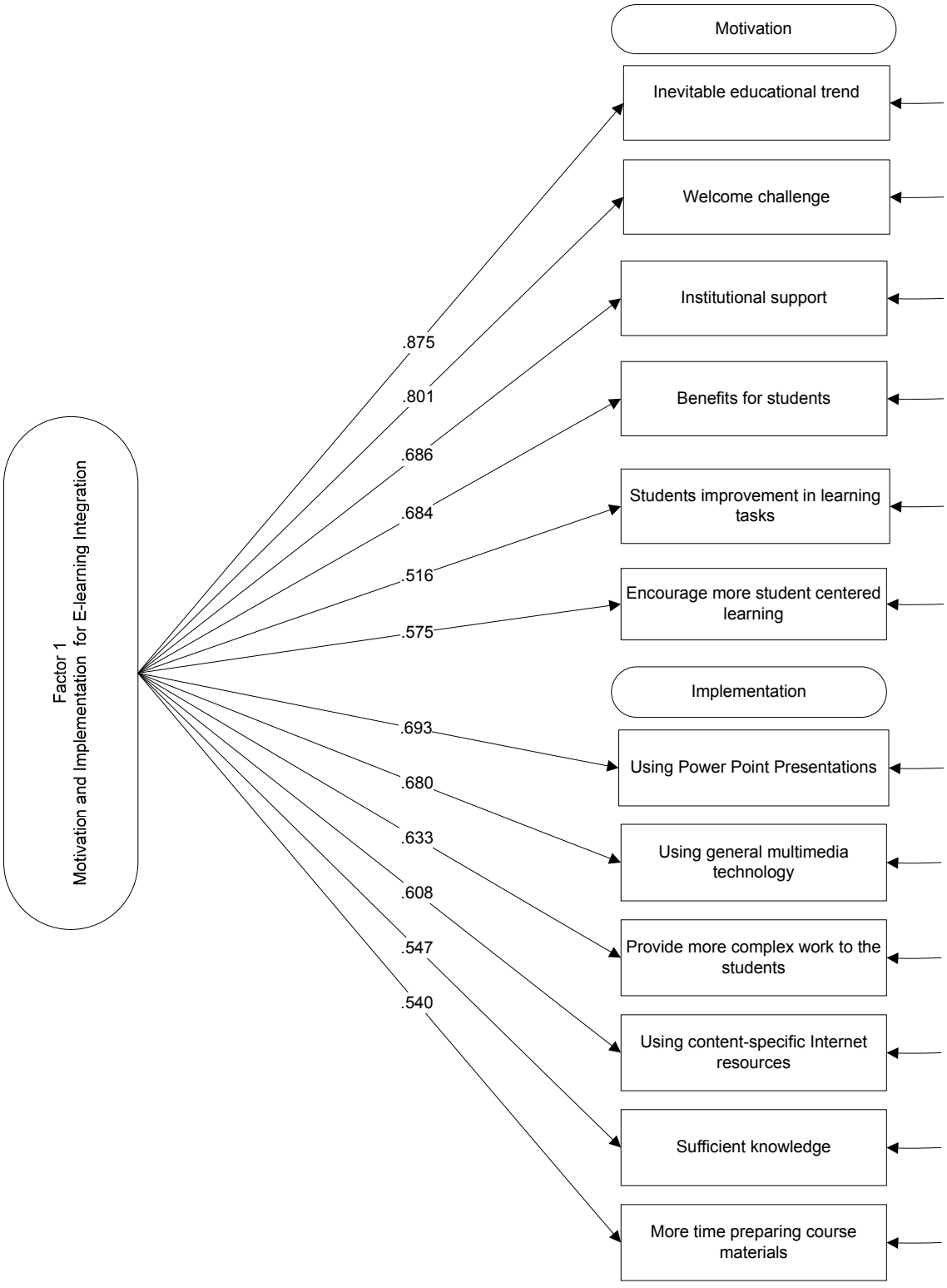

Figure 10. Trainer Indicators-factors constructing Motivation and Implementation Scale

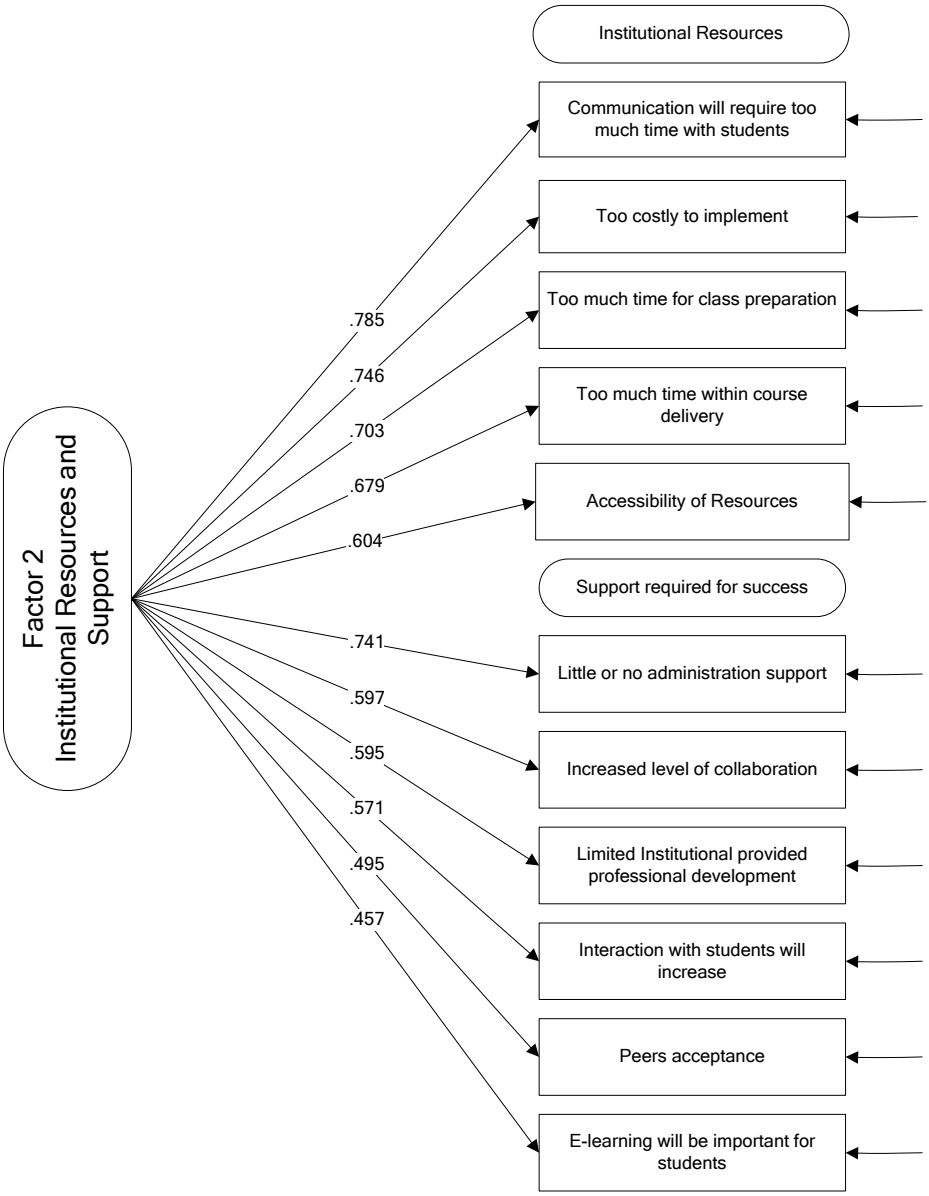

Figure 11. Trainer Indicators-factors constructing Institutional and Support Scale

- *Factor 2- Institutional Resources and Support*

Figure 11 shows that trainer factor 2, “institutional resources and support” has the two related constructs “institutional resources” and “support required for success”.

The two strongest loading items under resources are the potential communication time and implementation costs related to e-learning integration for in-service training. Under the construct of support required for technological integration success, the clear strong item was that of the level of support provided by the administration for that integration.

The indicators, “communication will require too much time with students”, “too costly to implement”, “too much time for class preparation”, “too much within course delivery”, and “accessibility of resources” load to the “institutional resources and support” factor under the concept of “institutional resources”. The indicators, “little or no administration support”, “increased level of collaboration”, “limited institutional provided professional development”, “interaction with students will increase”, “peers acceptance” and “ e-learning will be important for students” load to the “institutional resources and support” factor under the concept of “support required for success”.

- *Factor 3- Perceptions and Needs of E-learning*

Trainers’ factor 3 “perception and needs of e-learning” presented two constructs, the trainers’ perception about e-learning and the institutional and technical support related to the e-learning integration. The trainers’ responses resulted in strong loadings for the perceived benefits of the technology for the TNP and on student learning. Related to the aspects of support, the trainers’ responses resulted in the strong loading of their own requisite student use of technology tools and of the necessity of a help desk provided the administration.

The indicators, “benefit for TNP”, “with the right tools, e-learning would be benefit for TNP”, “would have a positive effect on student learning” load to the “perceptions and needs of e-learning” under the concept of “perceptions about e-learning”. The

indicators, “require the use of multimedia technology”, “need a help desk to resolve technical problems”, “need a unit to digitize of course content”, “instructional technology support”, “using content-specific Internet resources”, “need administrative support” and “requiring the use of online communication” load to the “perceptions and needs of e-learning” factor under the concept of “institutional and technical support”.

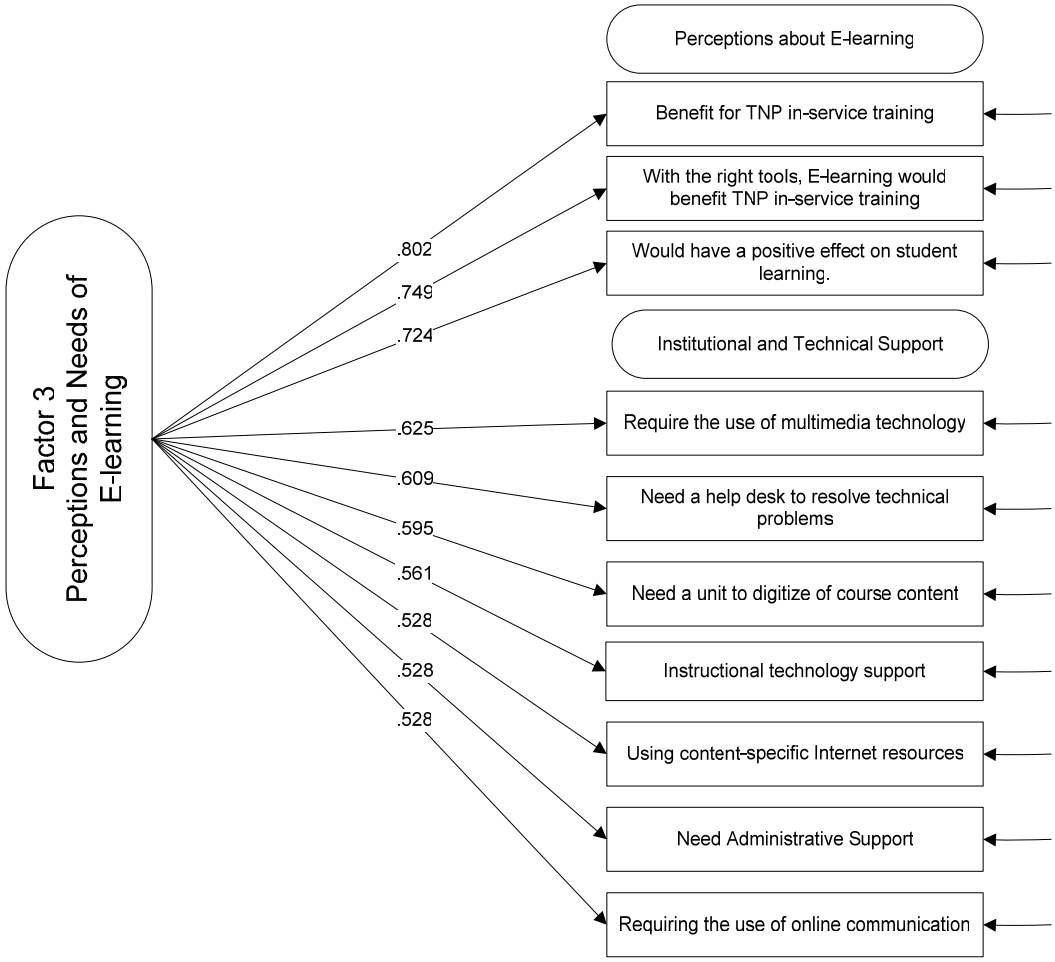

Figure 12. Trainer Indicators-factors constructing Perceptions and Needs of E-learning Scale

- *Factor 4- Interactive Communication*

Trainer factor 4, interactive communication contained aspects related to communication and forms of support required by the trainers for e-learning technology integration. The trainers' responses resulted in the strong loading

The indicators, "teacher-student interaction", "student-student interaction" and "interact with content and construct" load to the "Interactive communication" factor under the concept of "trainer philosophy of interaction". The indicators, "institution-provided professional development", "informal collegial instruction or support" and "self-taught" load tot the "interactive communication" factor under the concept of "need individual support".

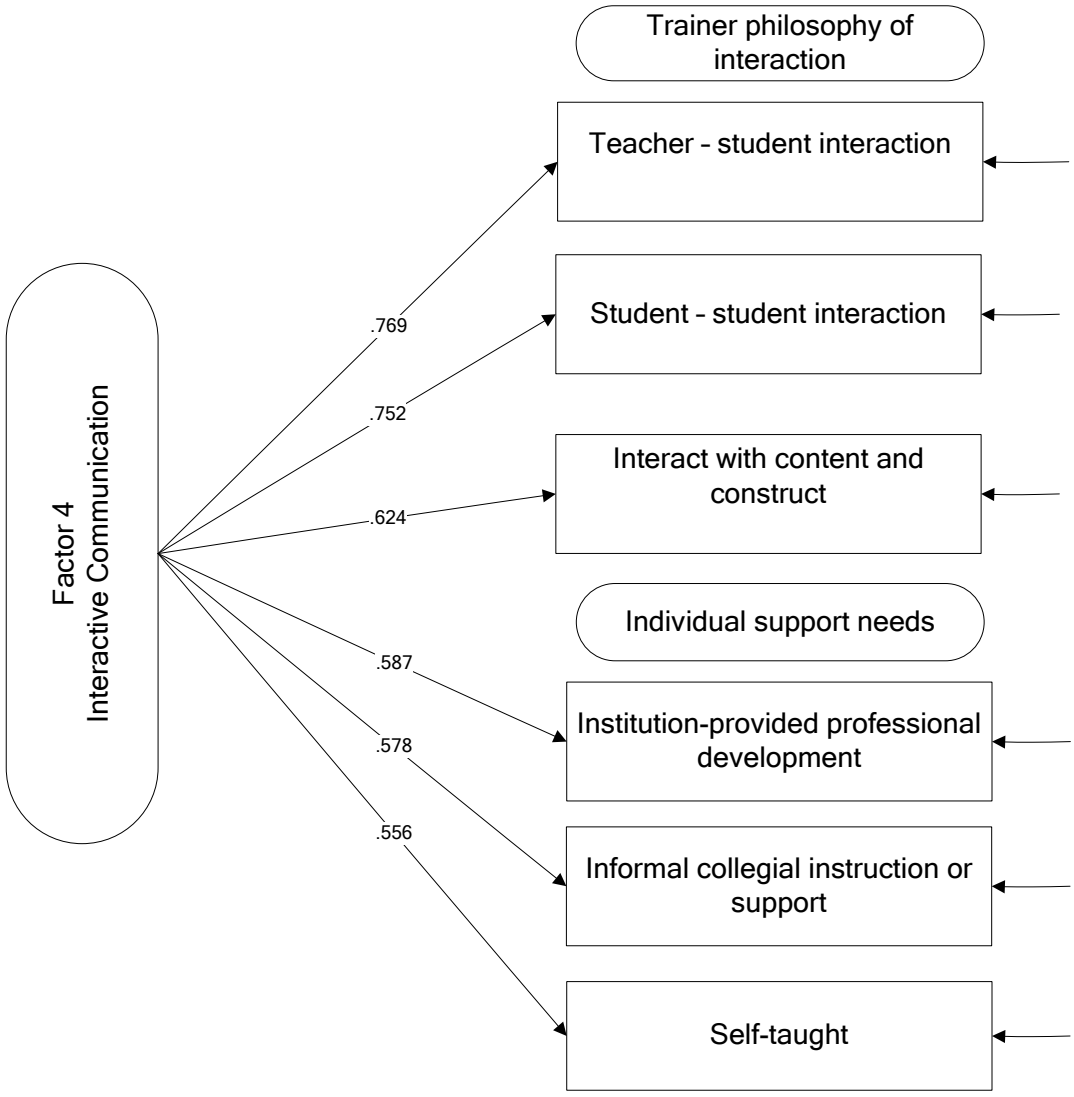

Figure 13. Trainer Indicators-factors constructing Interactive Communication Scale

- *Factor 5- Personal Efficiency with E-learning Technology*

Trainer factor 5 corresponds to issues related to trainers' considerations about their individual ability with e-learning technology. As seen in Figure 14, this factor had the fewest items and overall weakest loading of trainers' responses to the relevant items. The trainers' concerns about personal level of technology skill were followed by the need for technical training.

The indicator, “individual lack of technology skill”, “necessity of technical training” and “interest in integration training” loads to the “personal efficiency with e-learning technology” factor.

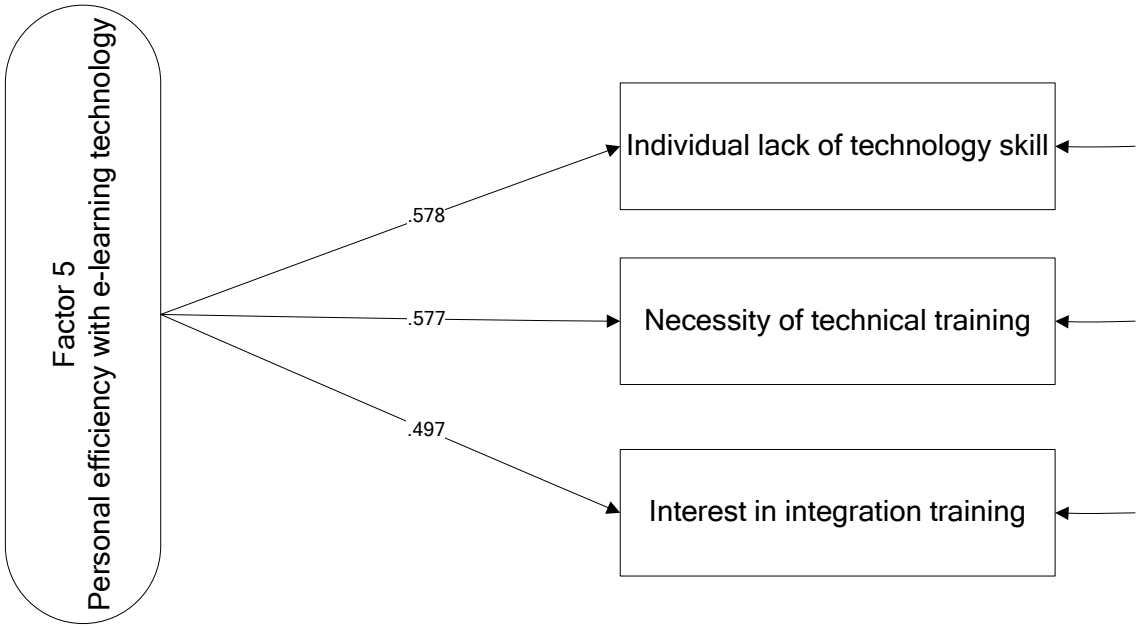

Figure 14. Trainer Indicators-factors constructing Required Support for E-learning Integration Scale

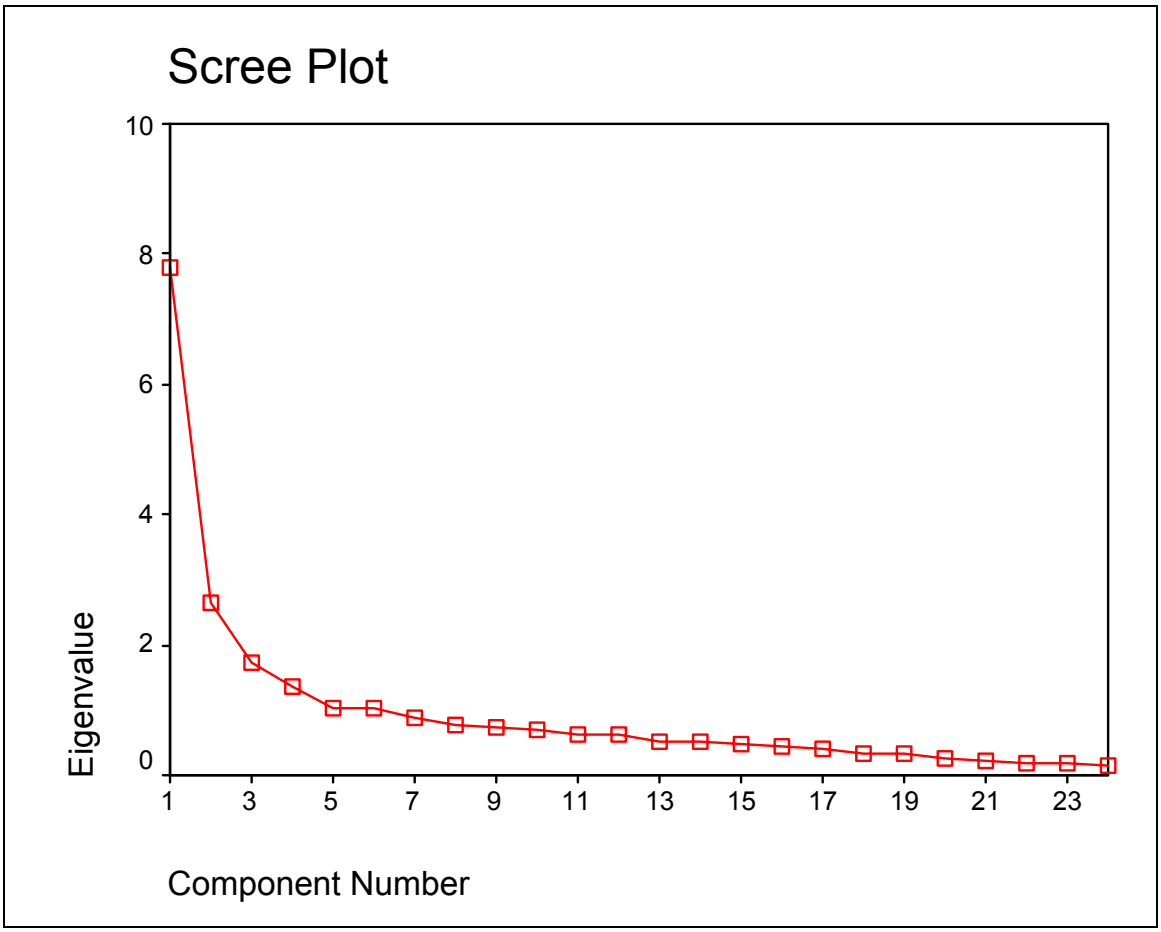

Figure 15. Screeplot for trainees' survey.

To extract the factor loadings, principal component analysis with rotation method involving Varimax with Kaiser normalization is used. The following section includes the illustration of the factor analysis carried out by the researcher along with the explanation. The theoretical illustration of the factors and their loading are presented in the next section.

The factors and indicators loading to these factors are listed for **Trainees** as follows*:*

Factor 1: Institutional support and resources for easy integration and benefits of e-learning

Factor 2: Implications of E-learning

Factor 3: Concerns about E-learning integration

Factor 1- Institutional support and resources for easy integration and Benefits of E-learning

Trainee factor 1 corresponds to issues related to the trainees' beliefs about necessary administrative support and resources for, as well as the benefits of, e-learning technology integration. As seen in Figure 16, this factor had the most items and the widest range of loading, including the items with the strongest loading of all trainees' responses to an individual item (q16) as well as the weakest (q8). The trainees' concerns about collegial acceptance of the technology were accompanied by their perceptions of the benefits that the integration could have for the in-service training context in general as well as for student interaction within the training course. Factor 1 also encompassed the trainees' beliefs in the utility of the technology for themselves in general and as motivation to attend more training. Additionally, this factor loaded items relating to trainees' views of certain aspects of support by the administration necessary to facilitate the adoption and use of the technology.

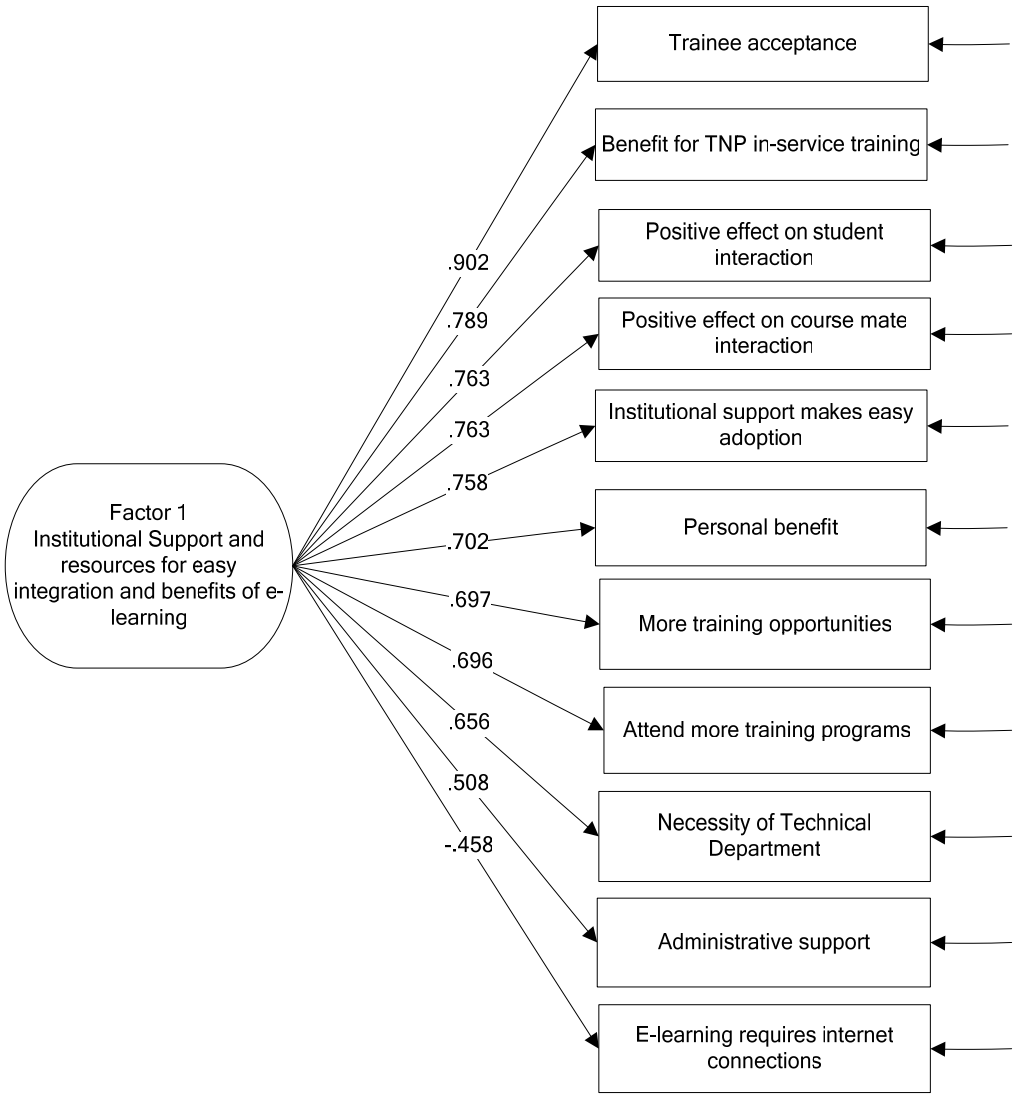

Figure 16. Trainee Indicators-factors constructing Institutional support and resources for easy integration and benefits of E-learning Scale

The indicators, “trainee acceptance”, “institutional support makes easy adoption”, “necessity of technical department”, “administrative support”, “e-learning requires Internet connections ”, “positive effect on student interaction”, “benefit for TNP in-service

training", "positive effect on course mate interaction", "personal benefit", "more training opportunities" and "attend more training programs" load to the "institutional support and resources for easy integration and benefits of e-learning" factor.

Factor 2- Implications of E-learning

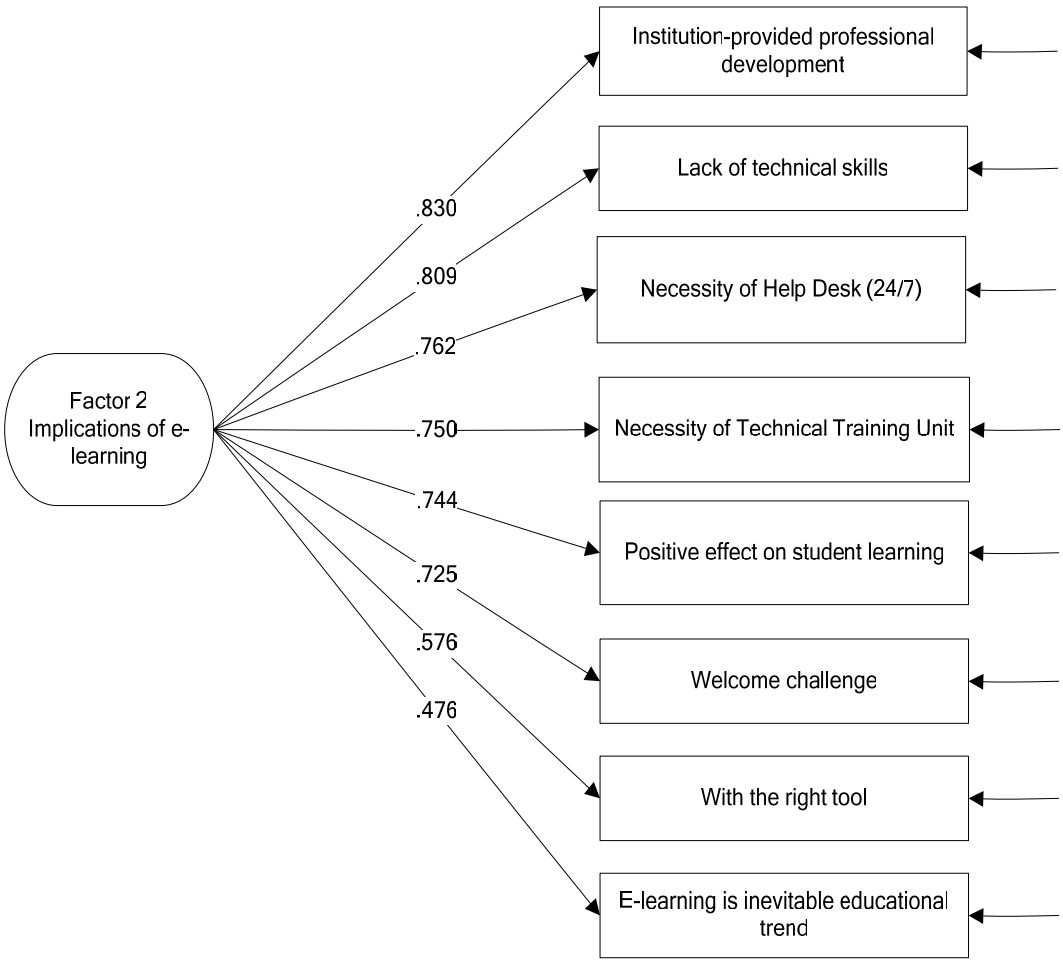

Figure 17. Trainee Indicators-factors constructing Implications of E-learning Scale

Trainee factor 2 corresponds to trainee beliefs in the inevitability of e-learning as well as their reaction to and their ability with the e-learning technology. It also encompasses a delineation of specific necessary administrative support services, and of trainee perceptions of the benefits the technology could have on individual learning.

The indicators, “institution-provided professional development”, “lack of technical skills”, “necessity of help desk (24/7)”, “necessity of a technical training unit”, “positive effect on student learning”, “welcome challenge”, “with the right tool”, and “e-learning is inevitable educational trend” load to the “implications of e-learning” factor.

Factor 3- Concerns about E-learning

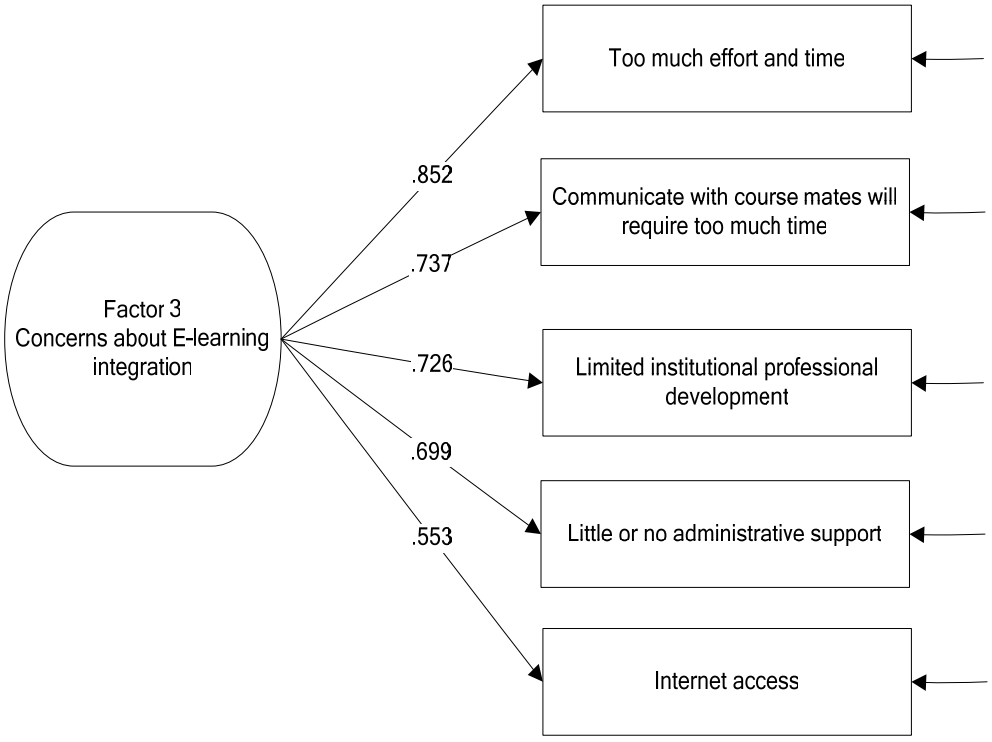

Figure 18. Trainee Indicators-factors constructing Concerns Scale

Trainee factor 3 involved the trainees’ concerns with the available amount of administrative support provided to integrate e-learning technology as well as their concerns with the amount of time the integration would require from them. This factor also included the trainees’ claims about their level of access to the Internet.

The indicators, “too much effort and time”, “communicate with course mates will require too much time”, limited institutional professional development”, “little or no

administrative support" and "Internet access" load to the "concerns about e-learning integration" factor.

Comparisons of Trainer and Trainee Responses to Similar Questions

Table 18

Mean Response to Survey Indicators for Trainers and Trainees

*** p<0.001, ** p<0.01, * p<0.05 (Appendix J)

#	Questions	Trainers Means (*M*)	Trainees Means (*M*)	Mean Difference	t- value (sig)
1	I personally do not have enough technological skills to participate in e-learning for in-service training.	2.93	2.4	.53	5.39***
2	My knowledge and technological skills to participate in e-learning for in-service training would depend on institution-provided professional development.	3.6	2.9	.7	2.25*
3	I believe that e-learning technology integration in in-service training will be very useful for me.	3.27	3	.27	3.56***
4	E-learning technology integration in in-service training would require too much effort and time from me.	2.51	2.6	.09	-1.23
5	Using e-learning technology to communicate with my course mates will require too much of my time.	2.43	2.5	.07	-0.39
6	There would be limited institutional professional development opportunities to learn about new technology at my organization.	2.17	2.7	.53	1.00

7	There would be little or no administrative support for the integration of e-learning technology in in-service training.	2.49	2.7	.21	-0.93
8	I would see e-learning technology in in-service training as a welcome challenge.	3.51	3.3	.21	3.19**
9	I believe that using e-learning technology is an inevitable educational trend.	3.59	3	.59	7.151***
10	I believe that I would receive administrative support to use e-learning technology in in-service training.	3.33	2.6	.73	8.37***
11	I believe that e-learning technology integration in in-service training would be accepted among my colleagues.	3.1	2.8	.3	3.33***
12	If I use e-learning technology, my interaction with course mates would increase.	3.3	2.4	.9	4.62***
13	I believe that if I had institutional support I could easily adopt the e-learning technology in in-service training.	3.52	3.1	.42	6.66***
14	I believe that a help desk (7/24) would be needed to help me resolve technical problems.	3.33	3.1	.23	2.53*
15	I believe that a department would be needed to provide me technical training for easy integration of e-learning.	3.39	3.2	.19	3.34***
16	I believe that using e-learning technology in in-service training would have a positive effect on student learning.	3.3	3	.3	3.97***
17	I believe that e-learning would benefit TNP in-service training.	3.4	3	.4	5.71***
18	With the right tool e-learning would benefit TNP training.	3.42	3.3	.12	1.61

Of the 42 trainer survey items and the 24 trainee survey items 18 explored common constructs as can be seen in Table 18. In general, both the trainers and trainees have a fairly positive view of e-learning and perceived that support from the administration would be an important factor in the success of such an endeavor for in service training. Differences in perceptions can be seen in response to 7 items (#1, #2, #6, #9, #10, #12, and #17) which have a differential larger than .4. Especially with items

#2, #10, and #12, there are divergences between the trainers and trainees on these specific aspects of e-learning and their own interaction and the support of the administration with this technology.

The t-values in Table 16 show that the mean differences of the responses given by the trainer group when compared with those of the trainee group regarding different aspects of e-learning technology integration are, in general, significant. In particular, the t-values for 10 of the 18 items display the highest level of confidence ($p<.001$; 99.9% confident) there is a statistically significant difference in the perceptions of the two groups for certain issues, 1 item expressed a strong level of confidence ($p< .01$; 99% confident) and 2 items expressed 95% level of confidence ($p<.05$).

Open-Ended Questions from Both Surveys

As previously mentioned, this is primarily a quantitative study with a qualitative component. However, because of the low response rate to the open-ended questions, this qualitative data will not be formally analyzed. Nonetheless, all the comments collected from both surveys' open-ended questions will be used in the discussion and conclusion sections in chapter 5. The researcher categorized the comments which were received from trainers and trainees in four sections. First was the importance of using e-learning for in-service training; then, the importance of administration support; the role of institutional support and resources; and finally the last were of general warnings and suggestions. A transcript of the original responses in Turkish is found in Appendix K.

CHAPTER V

DISCUSSION AND CONCLUSIONS

Changing people's customs is an even more delicate responsibility than surgery.
Edward H. Spicer

The primary purpose of this targeted research was to determine significant factors affecting TNP trainers and trainees toward the adoption of e-learning technology for in-service training. To explore the beliefs and practices of the participant TNP trainers and trainees about using e-learning technology for in-service training, this study used two surveys based on Rogers and Nicolle. Within each stage of this study, pertinent data were gathered to assist in answering the research questions. By offering the perspective from the context of a group on the cusp of a massive integration of technology at all levels, this study adds to the literature of the "evolving line of inquiry focused upon the effects of adopting and implementing technological innovations to enhance teaching, learning, and pedagogical productivity" (Nicolle, 2005, p. 118).

This chapter summarizes the final analyses of the research and presents a discussion about the significance of the findings. Recommendations for possible institutional modifications are offered and implications for future research are also discussed. Finally, an overall conclusion is presented.

Summary and Discussion

The two surveys provided quantitative data that illuminated descriptive characteristics of the Turkish Police trainers and trainees in relationship to their perceptions and utility of, interest in, and concerns about the integration of e-learning for

in-service training in the TNP. Overall, the data suggest that both the TNP trainers and TNP trainees acknowledge a strong need for administrative support for their own involvement with new technology in the learning and teaching environment, specifically for TNP in-service training. Indeed, the factors that appear important to motivate a technology integration process are institutional support, institutional resources, and professional development. For each group, trainer and trainee, significant relationships were observed. For the trainers, the Cronbach's alpha value was .716, a reasonably strong value. For the trainees, the Cronbach's alpha value was slightly higher, .733, also a reasonably strong value. Reliability and validity issues were explained in detail in the fourth chapter.

This section contains a summary of the main findings from trainer and trainee responses to both the ranked items and the open-ended questions. A discussion of the findings follows, based on the data responses to the research questions posed in chapter 1.

For the most part trainers felt that students learn best by interaction with content in a learner-centered focus, which also includes teacher-student interaction. For this to take place trainers felt that an e-learning context is ideal. Consistent with the philosophy of the utility of e-learning and the importance of student interaction with materials, trainers perceived the beneficial outcome of e-learning to be increased student skill in learning tasks, such as analyzing data and solving problems; clearly these skills have direct applications to their TNP job context.

Trainers indicated a strong belief in the inevitability of general e-learning technology, and its potential benefits, as well as demonstrating a willingness to meet its

challenges. However, in terms of barriers to this challenge, they revealed a concern with the lack of their own knowledge and skill to implement it. This demonstrates the need for support from the administration, which they felt was necessary for the accomplishment and would be supplied.

Trainers further revealed a strong interest to participate in e-learning integration training, but requested ongoing technology support by departments. Trainers also displayed consistently strong interest in the implementation and delivery phase of the e-learning integration process. Overall, they felt that the tools would benefit their teaching and the student learning, but most strongly reiterated the belief that institutional support was necessary to facilitate the adoption and to maintain of this technology. Thus, the data imply a general positive attitude toward e-learning technology and a strong positive perception of its advantages within the context of TNP in-service training not only for themselves, and the training content but also for the trainees.

In general, the trainees' responses demonstrated similar if slightly less strong beliefs in the inevitability and utility of, and interest in e-learning technology. They felt that they had already attained a level of technological skill necessary to participate in an e-learning context. And while convinced that both departmental and overall administrative support would be necessary for easy integration, they were less sanguine that they would receive consistent administrative support. However, consistent with the trainers' views, the trainees strongly agreed that they would welcome the challenge of using e-learning technology in in-service training. They also espoused the belief that e-learning would be very beneficial for TNP training, both for general student learning outcomes as well as their own personal knowledge. Finally, trainees consistently voiced

the belief that e-learning technology would create more opportunities for training and encourage them to attend more training.

Together, both the trainers and trainees feel strongly that e-learning is inevitable and welcome, but that requires consistent ongoing administrative support at all stages of the process. Differences are seen only in the perceived level of requisite skills already held by the participants.

Perhaps these differences may be attributed to the differential age ranges and breadth of educational training experiences across the two groups. Although on one hand, the trainees feel more confident in their personal technological knowledge, this may be simply because in general they are younger and have had more exposure to general technology for most of their lives than have the trainers (84% of the trainees are under the age of 40, while only 64% of the trainers are under the age of 40). On the other hand, the trainees have had relatively less higher education and job related training experiences and less experiential knowledge of the changing, complex nature of TNP hierarchy. That is, as a group they are younger and lower in rank than the trainer group and thus, may have a more constrained view of the possibilities of administrative support and of the e-learning effects on collegial relationships.

Interestingly, the trainees felt that their peers may not share the outlook of the many positive benefits of e-learning but individually perceived the technology to be advantageous. Their fears may be unfounded because as a group, the trainees did indicate an overall strong belief in the various benefits that e-learning technology could have. That the trainers indicated a stronger belief in not only the need for administrative support but also the expectation that it would be provided may perhaps be due to the

previous positive experiences trainers have already had with supportive TNP administration.

Factor Analyses

The trainers' responses to the 42 scaled items provided 5 factors, while the trainees' responses to their 23 scaled items resulted in 3 factors. Of the 5 trainer factors, the first covered the construct of motivation toward and implementation of e-learning technology as shown in Chapter 4, the strongest loadings indicated the trainers' belief in the unavoidable use of e-learning technology for teaching and their own eagerness to accept it, despite any potential obstacles. Under the construct of implementation the strongest loadings indicated the trainers' willingness to use technology to present material in a new format that can be tailored to the instructors' teaching styles as well as using other forms of technological media in conjunction with the e-learning context.

Trainer factor 2 covered the aspects of institutional resources and support necessary for e-learning integration. The trainer consensus resulted in the strong loading of the items related to personal time for communication, financial cost, and administrative support for e-learning integration. Their responses indicated the perception that the e-learning integration would not require an inordinate amount of their time to communicate with their students and that e-learning would not be too costly. They also strongly indicated that support provided by the administration would be instrumental to the integration of the new technology within the TNP in-service training context.

Trainer factor 3 covered the trainers' perceptions related to e-learning benefits and to support and tools relevant to the e-learning technology. The trainers' responses demonstrated a strong belief in the advantages of the technology for both the TNP as a whole and TNP employees as students, if the appropriate tools were used and help was made available to solve any problems with the integration of the technology.

Trainer factor 4 encompassed the constructs related to teaching philosophy and to the support and knowledge required both from internal and external sources to operationalize that philosophy in the new e-learning context. That is, the trainers' responses indicated a clear articulation that learning is best effectuated when it is student-centered. In order for a trainer to provide an e-learning formatted in-service course conducive to that perspective, the instructor requires self-taught knowledge collegial help and professional development opportunities.

The final factor that resulted was that of personal efficiency with e-learning technology. It was the least strong, and contained the fewest items. Nevertheless, factor 5 illustrated a relationship that the trainers indicated between their perceptions of the inadequacy of their own current ability to use e-learning technology and the need for the administration to provide training to make up for that lack of knowledge.

For the trainees' factors, factor 1 covered certain aspects of their beliefs about necessary administrative support and resources for, as well as the benefits of, e-learning technology integration within the in-service training context. This factor demonstrated that while the trainees perceived e-learning integration to offer advantages for themselves, for their colleagues and for the in-service training process, they also perceived their colleagues to be less accepting of the technology than they

themselves were. This factor also included items relating to trainees' views of the need for a specific technical department as well as general administrative support to be supplied which they felt was likely. Of interest was the inverse relationship of the internet requirement for e-learning technology integration to ten other positive loadings. This strong negative loading taken together with the three relatively strong items related to the help provided by the administration to support the technology, implies that the trainees perceive the administrative choices of tools and general support to be more useful than the presence of the internet connection.

Trainee factor 2 grouped together trainee perceptions about the inevitability of e-learning technology as well as the estimation of their own e-learning skills and willingness to integrate it in an in-service context. Factor 2 also included their views of specific administratively supplied services necessary to support the technology integration in general and on an individual level. Finally, implications of the advantages of the integration of e-learning loaded on this factor. This factor showed that while the trainees felt that they had a level of skill necessary to participate in the new e-learning in-service context, which they would welcome, they also believed that their participation would partially depend on institutionally-provided professional development. To sustain the effectiveness and positive learning outcomes of the technology, they perceived that a round-the-clock help desk would be necessary to resolve general as well as their own individual technical problems.

Trainee factor 3 comprised trainees' perceptions of the possible limited administrative support for learning about technology in general and integrating e-learning technology specifically. It also contained the trainees' perceptions about the

amount of effort and time they individually would have to give to integrate and use the technology in the in-service context. The loading values of the items indicated that the trainees felt more strongly that there might not be the necessary level of support from the administration to achieve the technology integration, and that they felt that the integration would take too much of their own time and effort. The trainees felt that in general, they had some access to the internet; this was the least strong issue related to factor 3.

Open Ended Questions

Trainer Response to Open-ended Questions

Several trainers chose to respond to the open-ended question; the majority of the comments have a similar focus on the inevitability of the technology and its potential problems and solutions. One trainer noted that because the TNP is well known for using the latest technology, integrating e-learning technology is inevitable and should be done to maintain the organization's reputation for modern innovation. Another participant pointed out the problem of spending more time to prepare courses, but argued that this was an issue only the first time the course is converted to the format, after the initial preparation, there is no need to spend more time. One of the participants worried about the lack of individual technical skills, and in fact was anxious about a variety of technical problems. However, another participant mentioned the importance of the institutional support, technical infrastructures, and technical training. This trainer asserted that technical training should be available at all times, and that there should be no time limitations to accessing the help desk, either on-site or virtually. In a similar vein,

another respondent insisted that it is important to be able to asynchronously access and construct the content. E-learning will contribute to increasing the quality of the personnel and their services by providing more training programs. One participant was concerned with the exclusive utilization of e-learning for every kind of course, suggesting that the blended system might be more appropriate for some, more hands-on courses.

Trainee Response to Open-Ended Questions

As previously mentioned in the literature review, TNP obligatory in-service training, as in the US, is at least 20 hours a year. The TNP could become more efficient and diversify its training content by offering an e-learning opportunity to complete it. Thus, more officers might update their knowledge by attending more in-service training programs, but this might not be achieved without facing problems. This was one of the main themes found in the various trainee responses to the open-ended question. One trainee expressed the idea that though there is concern about receiving support from the administration for the technology integration, there is also great hope to adopt the new technology.

Another concern mentioned was that the creation of this learning environment would require too much money and time. Nonetheless, most of the respondents asserted that all money and time issues are related only to the initial establishment of the infrastructure and the initial phase of the course content preparation. One trainee, in a very pertinent comment, discussed the e-learning benefit of providing a fair opportunity for all officers. This is because of the highly centralized system—currently, if you are not working in big cities or city centers, you do not have the opportunity to

attend the courses that you want. If there are more online courses, more officers from different locations may attend more training programs.

One of the trainees mentioned his/her online course experience: when s/he was in the US for short term courses, the American police agency provided online training about crime mapping. This trainee said that it was an extraordinary experience to learn by using multi-media and presentation technologies for online courses, and it was impressive, creating great communication among course participants.

One suggestion was that POLNET, as Intranet, could be used for the e-learning environment instead of the Internet. Yet, another participant said that if e-learning technology is used with the right tools and in the right ways, it will be very useful both for trainers and trainees. However, an important warning was given by the participant; before spending lots of money to create the e-learning environment, a careful pilot study should be done. Also, the experiences of other organizations that already use e-learning technology for in-service training must be considered before applying the new technology in the TNP.

Research Questions Findings and Limitations

In this section, the results from the data analyses in relationship to the models used to formulate the research questions will be presented and discussed. Aspects of two models, Nicolle's CTIPM (2005) and Rogers's theory of DOI (1995), informed the constructs examined in this research. The main issues were four-fold and were purposely presented as steps in a process. The first one was the determination of attitudes and perceptions of TNP trainers towards e-learning. The second was the

determination of the factors that would promote the changes necessary for the trainers to accept the concept and integrate the technology in a manner compatible with their teaching style and philosophy. The third and fourth were the factors needed to facilitate the adoption by the trainers and the trainees of e-learning technology specific to the TNP in-service training context. Within the research framework, the process questions were presented in a sequential manner; however, it should be noted that this complex phenomenon is not linear, thus, many items on the survey assessed aspects corresponding to more than one of the research questions posed. This is seen especially in regard to the factors in research question 2.

Research Question 1: What are the attitudes and perceptions of the TNP trainers towards adoption of e-learning technology?

The analyses of the TNP trainers' interest in and relationship with e-learning integration support the trends seen in earlier research studies. That is, the trainers are positively disposed towards the possibilities that e-learning technology could provide. In particular, 86.2 % of the trainers believe that e-learning technology integration will have positive effect on their students; 96% of the trainers think that students learn more effectively through the teacher-student interaction that e-learning fosters. More than 80% of the trainers believe that student-student interaction is also important and is promoted by e-learning. Almost all the trainers (98%) agreed that students learn most effectively when provided opportunities to interact with content and construct their own learning, which is a hallmark of the e-learning context. Nicolle (2005) found similar positive views among the faculty members participating in her study.

However, despite this positive perspective, certain trainers also indicated some concerns. More than one-third of the trainers believe that they do not have enough personal technology skills to integrate e-learning technology into in-service training, and 46% of the trainers are concerned about spending more time for class preparation. Nonetheless, more than 50% of the trainers do not think class preparation, course delivery, or communications with students will require too much more time in the e-learning context compared to traditional modes.

Finally, of major importance to the trainers is the perspective of administration toward e-learning integration. Approximately 70% of the trainers are concerned about administration support for the integration of e-learning technology in in-service training and believe that for the integration of e-learning technology in in-service training, institutional professional development opportunities will be limited.

Research Question 2- What factors determine the TNP trainer's adaptation to e-learning technology?

All of the five following factors appeared to have a direct or indirect effect on some phase of trainers' adaptation to the process of technology integration.

a- TNP command structure support for e-learning

This factor is crucially important to the trainers' willingness to embrace e-learning technology. Almost all of the trainers believe that they can easily adopt e-learning technology in in-service training if they have institutional support. They think that they would need a help desk (24/7) to help them and their students resolve any technical problems. In fact, 98% of the trainers believe that a department would be needed to provide them and their students with technical training for easy integration of e-learning.

b- TNP resources for e-learning

Although trainers perceived that much of their e-learning knowledge could be self-taught, this implies the provision of module content by the administration. They also clearly felt that e-learning technology is affordable and beneficial, but reiterated that the administration would need to create a department to aid in technical aspects of translating traditional course materials into the e-learning context.

c- Technology of delivery service

Trainers felt that the integration of e-learning technology in the course could be accomplished in a timely manner and would permit efficient communications with students. E-learning would also allow them to present more complex work, through Internet resources and general multi-media tools, resulting in an improvement in students' data analysis and problem solving skills.

d- Trainers resistance and acceptance to e-learning technologies

The trainers suggested less resistance and more concern about general and specific e-learning integration aspects. Specifically, they evinced a strong belief in the inevitability of e-learning and in the importance of e-learning technology for their students. They also voiced the expectation that e-learning technology would lead to greater collaboration among the students.

e- Trainee resistance and acceptance to e-learning technologies

Trainees presented an outlook compatible with trainer perceptions regarding their willingness to embrace the e-learning context for in-service training. In fact, trainees felt that e-learning would provide more variety of training, encourage them to attend more training, and in general be useful for themselves individually and for the TNP as a whole. They agreed with the trainers that the administration would need to provide support at every step of the e-learning integration process to facilitate its initial adoption and continued use.

Research Question 3- Which factors facilitate adoption for trainers?

The very strong positive perspective toward and the belief in the inevitability of e-learning technology clearly has a facilitory effect on the adoption of the technology by trainers. Coupled with the belief that the technology would provide new tools to improve information delivery in the in-service context, the belief that the administration would be supportive of and foster trainer learning, the trainers' responses demonstrated a hope that all of the components would act together to ease the transition.

Research Question 4- Which factors facilitate adoption for trainees?

The trainees' overall perspectives show alignment with those of the trainers. That is, the trainees have the same positive outlook towards the use of e-learning technology within the TNP context, recognizing its potential as beneficial both on a personal level and for the TNP organization as a whole. For the trainees, that administrative support is of paramount concern, but they also perceive the administration to be willing to provide that assistance.

As with the trainers', the trainees' responses demonstrate the same interrelationship of factors that should lead to the smooth integration of the technology for the trainees. The aspects that are perceived as crucial by both groups to facilitate their own involvement in a technological integration process seem to be the positive view of the administration toward the integration as operationalized by the provision of the necessary and appropriate tools, of a support department, and of a round-the-clock help desk.

Limitations

As with most survey research, there are certain limitations inherent within the paradigm. For this study, the sample size, though adequate for the type of analyses conducted was small which creates limited generalizability to other populations. Because the survey instrument was researcher-adapted, created by the integration of several constructs, the reliability would need to be tested in other disciplines, which would require certain revisions appropriate for the targeted groups and contexts.

However, it should be noted that many of the findings support those found by Nicolle (2005).

The purpose of these surveys was to gain a general sense of the perceptions that TNP in-service trainers and trainees had towards the concept of e-learning technology and of the beliefs the groups held regarding the involvement and support necessary from the administration for the integration to take place. The instruments, thus, provide only a broad view of the trainer and trainee perspectives. Further expansion of the survey would be necessary to obtain more specifics.

Recommendations, Implications and Conclusion

Recommendations for the TNP

This research reveals the TNP trainers' and trainees' beliefs about what factors need to be in place to motivate the trainers and the trainees to embark on the technological integration process. This information is crucial because it allows TNP administrators to facilitate, in an effective and efficient manner, the "inevitable" introduction of e-learning technology into the TNP context. This research could be used as a road map by the TNP Education Department in any future planning for the creation of an online teaching-learning context. For in-service training programs, the Education Department could apply aspects of this study's findings to provide a more flexible system of training information dissemination.

Of paramount importance would be the creation of a new department responsible for providing technical training and support for TNP personnel and for supplying the

materials and expertise necessary for the implementation and maintenance of e-learning.

Within the TNP environment, to avoid any disconnect between instructors beliefs about “best teaching practices and the inclusion of technology” (Nicolle, 2005, p.120) certain meeting opportunities are suggested. These include the introduction of brown-bag seminars to allow colleagues to share teaching strategies and useful technology skills. Departments should provide informal meetings to share relevant e-learning information. Recognition of trainers or personnel who can mentor colleagues in the use of e-learning technology should be made.

Both the trainers and trainees express the need for specific professional development and technological assistance for the integration of the e-learning technology in the in-service training context. At the same time, both groups voiced a belief in the importance of positive administrative endorsement and reinforcement for the implementation and integration of this new technology. This support would be seen in both the initial stages and continual involvement with this technology. To implement this, it is suggested that round-the-clock help-desks and technicians be made available in addition to offering professional development focusing on specific, identified personnel needs for both trainers and trainees. The administration should also provide the necessary hardware and software for the integration of e-learning technology; this should be upgraded consistently as necessary to maintain the most current versions of the systems.

The trainers have demonstrated great faith that the administration will be responsive to the technological needs and be forthcoming in providing the necessary

support. The trainees, however, were somewhat more cautious in their acceptance of this aspect of administrative communication. Therefore, it is suggested that to establish channels of communication regarding the technology adoption, the administration should convey the initial clear communicative directives regarding the positive administrative support for the e-learning integration and solicit opinions, concerns, and suggestions from the personnel to efficiently operationalize the integration. Moreover, it is recommended that the administration makes a continual effort to maintain the flow of the communication in both ways throughout the whole process.

Implications for Future Studies

In order to track the process of technology integration, both from a content level and a skill level, the constructs examined in this research could be further refined to assess changes that result from the interaction between the technology and its users. Further research would provide specific knowledge to increase the understanding of the integration process. Tracking the fluctuations in the self-identified stages of technology use and knowledge of not only trainers and trainees, but TNP personnel in general would be beneficial to be able to gauge appropriate levels and types of necessary support.

Another area that merits further examination is that of the communication channels and patterns within the TNP organization. In particular, studies could focus on the issues involved in trainer to trainee communication, in colleague to colleague communication, and administration to personnel communication, and how technology effects and affects those issues. Parallel to the interpersonal interface concerns, future

research should explore the appropriate systems to provide the best possible mode of in-service delivery, using e-learning technology and the internet. The focus should be on determining a method to control for any possible inappropriate use (cheating, pirating) without compromising security.

Finally, the greatest implication of this research is for the operationalization and process of adoption of e-learning technology in the TNP context. The findings suggest that before converting all instruction to this new teaching platform a trial should be made and monitored to determine the most feasible mode of adoption. Information gathered during this trial phase would be used to inform decision makers as to the most efficient and effective way to integrate new technology not only for in-service training but also for inter and intra departmental training and communication. TNP administrators would benefit from making use of high levels of trainer enthusiasm of e-learning and engage the trainers as stakeholders in implementing e-learning. Additionally, this information could be used to assist in the development of international training modules.

Conclusion

The centralized Turkish National Police organization is unparalleled with any U.S. law enforcement agency; the most comparable organization would be that of the U.S. National Armed Forces. However, whereas the military can devote half of its budget to training, police organizations have diverse, ongoing operational responsibilities whose funding must be controlled. Therefore, training resources must be optimized. The TNP has a national scope, with international relations, and as the number of personnel increases and carries out missions within and beyond Turkish borders, it becomes

infeasible to transport all the officers who must undergo training to the central location of Ankara. The current time and budget constraints limit the availability and diversity of in-service and professional development opportunities. Future training, more flexible and broader in scope, must be available to all officers “in situ”. Clearly, e-learning technology offers the means to effect this.

This study has found that the current TNP trainers and trainees are responsive to this new platform of information sharing. Through their responses to the instrument created for this research, the trainers’ and trainees’ positive perceptions about their own skills with and the advantages of the e-learning technology have been revealed. Most importantly, both groups have identified a strong belief in the support of the administration to implement and maintain this technology, resulting in benefits for individual personnel and the organization as a whole.

The innovation of this research is not to create the online training; rather, it is to determine the acceptance and success of its implementation on a massive scale by defining the conditions necessary for success. Henry Ford was known as a great innovator, not for creating the automobile, but for creating the concept of mass production with a practical plan of the conditions for success. It is hoped that this study will provide the TNP with options to expand the topics offered and tailor the dissemination of the information necessary for training in a variety of appropriate teaching formats, traditional, virtual, and blended.

APPENDIX A

TRAINERS' AND TRAINEE SURVEYS QUESTIONS

TRAINERS SURVEY INSTRUMENT

The process of E-learning Technology Adoption and Integration in in-service training by TNP Trainers

Instructions:

The following statements have been formulated to assist in the development of a process matrix that TNP in-service trainers may follow in the adoption and integration of e-learning technology. E-learning technology in in-service training includes your technology use in teaching preparation, your technology use for instructional delivery and technology require for your course delivery.

This 43 item survey should take approximately 15 minutes to complete.

Your responses are extremely valuable contributions to this dissertation study and your effort and time spent are sincerely appreciated.

Please check (√) or write the response that most clearly represents your opinion, attitude, situation, experience, or knowledge.

Please indicate your level of agreement with each of the following statements using the following scale:

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

1.	**General Perspectives**	**1**	**2**	**3**	**4**	**5**
a.	My knowledge and strategies of e-learning technology integration in in-service training would depend on institution-provided professional development.					
b.	My knowledge and strategies of e-learning technology integration in in-service training would depend on informal collegial instruction or support.					
c.	My knowledge and strategies of e-learning technology integration in in-service training would depend on self-taught.					
d.	I believe that e-learning technology integration in in-service training will be very important for my students.					
e.	My teaching philosophy reflects my beliefs that students learn most effectively through teacher-student interaction.					
f.	My teaching philosophy reflects my beliefs that students learn most effectively through student-student interaction.					

g.	My teaching philosophy reflects my beliefs that students learn most effectively when provided opportunities to interact with content and construct their own learning.					
2.	**Barriers to E-learning Technology Integration**	**1**	**2**	**3**	**4**	**5**
a.	I do not have enough personal technology skill to integrate e-learning technology in in-service training.					
b.	E-learning technology is considered too costly to implement.					
c.	E-learning technology integration in in-service training will require too much of my class preparation time.					
d.	E-learning technology integration will require too much time within course delivery.					
e.	Using e-learning technology means to communicate with my students will require too much of my time.					
f.	There are limited institutional professional development opportunities to learn about new technology at my organization.					
g.	There will be little or no administrative support for the integration of e-learning technology in in-service training.					
3.	**Motivation for E-learning Technology Integration**	**1**	**2**	**3**	**4**	**5**
a.	E-learning technology integration will benefit my students.					

b.	I see e-learning technology in in-service training as a welcome challenge.					
c.	I believe that using e-learning technology is an inevitable educational trend.					
d.	I believe that I will receive administrative support to use e-learning technology in in-service training.					
e.	I believe that e-learning technology integration in in-service training will be accepted among my peers.					
4.	**Goals for E-learning Technology Integration**	**1**	**2**	**3**	**4**	**5**
a.	If I use e-learning technology, I will be able to present more complex work to my students.					
b.	If I use e-learning technology, I expect an increased level of collaboration among my students.					
c.	If I use e-learning technology, I will spend more time preparing materials and resources for instruction.					
d.	If I use e-learning technology, my students will show improvement in learning tasks, such as analyzing data, or solving problems.					
e.	If I use e-learning technology, my interaction with students will increase.					
5.	**Resources**	**1**	**2**	**3**	**4**	**5**
a.	I have sufficient knowledge of a range of e-learning technology resources for effective in-service training.					

b.	It is generally easy to obtain the resources I need for e-learning technology integration.					
c.	My department should provide access to instructional technology support.					
d.	I would participate more in technical or technology integration training, if it was available.					
6.	**Implementation – Delivery**	**1**	**2**	**3**	**4**	**5**
a.	I would use technology enhanced presentations (e.g., PowerPoint) as a strategy for my class delivery.					
b.	I would use general multimedia technology tools (e.g., audio, video) within my presentations during my class delivery.					
c.	I would use content-specific Internet resources (e.g. multimedia, databases) within my presentations during my class delivery.					
d.	I would require the use of general multimedia technology tools (e.g., audio, video) by my students.					
e.	I would require the use of content-specific Internet resources (e.g., sites, databases, and journal) within my discipline area by my students.					
f.	I would require the use of online communication (e.g., email, chat, instant messaging) by my students to foster group collaboration in learning group discussion.					

g.	Using e-learning technology in in-service training would encourage more student centered learning.					
7.	**Results**	**1**	**2**	**3**	**4**	**5**
a.	I believe that if I have institutional support I can easily adopt e-learning technology in in-service training.					
b.	I believe that a department would be needed to help me digitize my course content.					
c.	I believe that a help desk (24/7) would be needed to help me and my students resolve technical problems.					
d.	I believe that a department would be needed to provide me and my students' technical training for easy integration of e-learning.					
e.	I believe that using e-learning technology for in-service training would have a positive effect on student learning.					
f.	I believe that e-learning would benefit TNP in-service training.					
g.	With the right tool e-learning would benefit TNP training.					
h.	Below, please write any concerns, suggestions, or comments that you have related to e-learning.					

8. Demographic Information

I. _____My Gender; A. Male. B. Female.	III. _____My Current Rank; A. Police Officer. B. Deputy Inspector. C. Inspector. D. Chief Inspector. E. Superintendent. F. Commissioner of Fourth Degree. G. Commissioner of Third Degree. H. Commissioner of Second Degree. I. Commissioner of First Degree. J. Faculty
II. _____ My age is; <30 30-39 40-49 50-59 >59	IV. _____Your Educational Level; A. Elementary School. B. Middle School. C. High School. D. Two-Year University. E. Four-Year University. F. Masters Degree.

	G. Doctoral Degree.

V. The stage that best describes where I am within the e-learning adoption and integration into police in-service training:

Awareness (I am aware of e-learning technology and have some basic skills but I do not think I have sufficient expertise to use this technology without assistance.)

Learning the Process (I can use basic software and some standard hardware comfortably.)

Understanding and Applying the Process (I use a variety of technology resources/tools in my course preparation, instructional delivery, and evaluation.)

Creative Application to New Context (I am comfortable experimenting with various uses of technology for my teaching)

Facilitating the Process (I am eager to share my teaching with technology experiences with my colleagues.)

TRAINEES SURVEY INSTRUMENT

The process of E-learning Technology Adoption and Integration in in-service training by TNP Trainees

Instructions:

The following statements have been formulated to explore the beliefs and practices of TNP in-service trainees about using e-learning technology in in-service training.
This 24 item survey should take approximately 10 minutes to complete.

Your responses are extremely valuable contributions to this dissertation study and your effort and time spent are sincerely appreciated.

Please check (√) or write the response that most clearly represents your opinion, attitude, situation, experience, or knowledge.

Please indicate your level of agreement with each of the following statements using the following scale:

1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

		1	2	3	4	5
1.	I personally do not have enough technological skills to participate in e-learning for in-service training.					

2.	My knowledge and technological skills to participate in e-learning for in-service training would depend on institution-provided professional development.					
3.	I believe that to use e-learning technology in in-service training effectively, a help-desk should be available 24/7 to solve any technology related problems.					
4.	I believe that e-learning technology integration in in-service training will be very useful for me.					
5.	I believe that after if e-learning technology were integrating in in-service training more courses could be made available.					
6.	I believe that if e-learning technology were integrated in in-service training, I might attend more training programs.					
7.	E-learning technology integration in in-service training would require too much effort and time from me.					
8.	I believe that e-learning technology integration would require an internet connection.					
9.	I do not have access to the internet.					
10.	Using e-learning technology to communicate with my course mates will require too much of my time.					
		1	2	3	4	5
11.	There would be limited institutional professional development opportunities to learn about new technology					

	at my organization.					
11.	There would be little or no administrative support for the integration of e-learning technology in in-service training.					
12.	I would see e-learning technology in in-service training as a welcome challenge.					
13.	I believe that using e-learning technology is an inevitable educational trend.					
14.	I believe that I would receive administrative support to use e-learning technology in in-service training.					
15.	I believe that e-learning technology integration in in-service training would be accepted among my colleagues.					
16.	If I use e-learning technology, my interaction with course mates would increase.					
17.	I believe that if I had institutional support I could easily adopt the e-learning technology in in-service training.					
18.	I believe that a help desk (7/24) would be needed to help me resolve technical problems.					
19.	I believe that a department would be needed to provide me technical training for easy integration of e-learning.					
20.	I believe that using e-learning technology in in-service training would have a positive effect on student learning.					
21.	I believe that using e-learning technology in in-service training would have a positive effect on student interaction					

	with other students.					
22.	I believe that e-learning would benefit TNP in-service training.					
23.	With the right tool e-learning would benefit TNP training.					
24.	Below, please write any concerns, suggestions, or comments that you have related to e-learning.					

8. Demographic Information

I. _____My Gender;	III. _____My Current Rank;

A. Male. B. Female.	A. Police Officer. B. Deputy Inspector. C. Inspector. D. Chief Inspector. E. Superintendent. F. Commissioner of Fourth Degree. G. Commissioner of Third Degree. H. Commissioner of Second Degree. I. Commissioner of First Degree.
II. _____ My age is; <30 30-39 40-49 50-59 >59	IV. _____Your Educational Level; A. Elementary School. B. Middle School. C. High School. D. Two-Year University. E. Four-Year University. F. Masters Degree. G. Doctoral Degree.

APPENDIX B

INSTITUTIONAL REVIEW BOARD (IRB) FOR THE PROTECTION OF HUMAN SUBJECTS IN RESEARCH APPROVAL

UNT
UNIVERSITY OF
NORTH·TEXAS

DISCOVER THE POWER OF IDEAS

Office of Research Services

September 1, 2006

Selcuk Zengin
School of Library and Information Sciences
University of North Texas

RE: Human Subjects Application No. 06-294

Dear Mr. Zengin:

Your proposal titled "The Process of E-learning Technology Adoption and Integration in In-service Training by Turkish National Police (TNP)" has been approved by the Institutional Review Board as permitted under federal law and regulations governing the use of human subjects in research projects 45 CFR 46.101. **Federal policy 45 CFR 46.109(e) stipulates that IRB approval is for one year only, September 1, 2006 through August 31, 2007.**

Enclosed is the consent document with stamped IRB approval. Please copy and **use this form only** for your study subjects.

It is your responsibility according to U.S. Department of Health and Human Services regulations to submit annual and terminal progress reports to the IRB for this project. Please mark your calendar accordingly. The IRB must also review this project prior to any modifications.

Please contact Shelia Bourns, Research Compliance Administrator, ext. 3940 or Boyd Herndon, Director of Research Compliance, ext. 3941, if you wish to make such changes or need additional information.

Sincerely,

Scott Simpkins, Ph.D.
Chair
Institutional Review Board

SS:sb

P.O. Box 305250
Denton, Texas 76203-5250

940.565.3940 TEL
940.565.4277 FAX

940.369.8652 TTY
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APPENDIX C

CONSENT FORM FOR PAPER-BASED SURVEYS

Informed Consent Notice

My name is Selcuk Zengin and I am a Ph.D. student in the Information Science Department at the University of North Texas. I am conducting a study about "The process of E-learning Technology Adoption and Integration in in-service training by Turkish National Police (TNP)". It will take approximately 15 minutes for Trainers survey and 10 minutes for Trainee survey to be completed. Your responses are extremely valuable contributions to this dissertation study and your effort and time spent are sincerely appreciated.

Participation in this study is completely voluntary. You have the right to skip any question you choose not to answer. There are no foreseeable risks involved in this study; however, if you decide to withdraw your participation you may do so at any time by simply leaving the web site.

Your name will not be requested in this study so your responses will be anonymous. All research records will be kept confidential by the Principal Investigator. No individual responses will be disclosed to anyone because all data will be reported on a group basis. If you have any questions about the study, please contact Selcuk Zengin, 1-940- 594-2752 and Brian O'Connor-Ph.D. UNT-School of Library Information Sciences (SLIS), his phone number is 1-940- 565-2445.

This research project has been reviewed and approved by the UNT Institutional Review Board. Please contact the UNT IRB at 940-565-3940 with any questions regarding your rights as a research subject.

If you agree to participate, you may keep this document for your records.

You are confirming that you are at least 18 years old and you are giving your informed consent to participate in this study.

APPROVED BY THE UNT IRB
FROM 4/1/06 TO 8/31/07

APPENDIX D

CONSENT FORM FOR ONLINE SURVEYS

Informed Consent Notice for Online Survey

My name is Selcuk Zengin and I am a Ph.D. student in the Information Science Department at the University of North Texas. I am conducting a study about "The process of E-learning Technology Adoption and Integration in in-service training by Turkish National Police (TNP)". It will take approximately 15 minutes for Trainers survey and 10 minutes for Trainee survey to be completed. Your responses are extremely valuable contributions to this dissertation study and your effort and time spent are sincerely appreciated.

Participation in this study is completely voluntary. You have the right to skip any question you choose not to answer. There are no foreseeable risks involved in this study; however, if you decide to withdraw your participation you may do so at any time by simply leaving the web site.

Your name will not be requested in this study so your responses will be anonymous. All research records will be kept confidential by the Principal Investigator. No individual responses will be disclosed to anyone because all data will be reported on a group basis. If you have any questions about the study, please contact Selcuk Zengin, 1-940- 594-2752 and Brian O'Connor-Ph.D. UNT-School of Library Information Sciences (SLIS), his phone number is 1-940- 565-2445.

This research project has been reviewed and approved by the UNT Institutional Review Board. Please contact the UNT IRB at 940-565-3940 with any questions regarding your rights as a research subject.

If you agree to participate, you may print this document for your records.

By clicking below, you are confirming that you are at least 18 years old and you are giving your informed consent to participate in this study.

Click Here To Enter Study

APPROVED BY THE UNT IRB
FROM 9/1/06 TO 8/31/07
NB

APPENDIX E

SURVEYS' APPROVAL FROM TURKISH NATIONAL POLICE (TNP)

T.C.
İÇİŞLERİ BAKANLIĞI
Emniyet Genel Müdürlüğü
Dışilişkiler Daire Başkanlığı
Faks No : 00 90 312 466 90 22
Tel : 00 90 312 466 90 10
E-mail : disiliskilerdb@egm.gov.tr

SAYI : B.05.1.EGM.0.76.04.02-2817
TARİH :09/06/2006
İLGİ :08.06.2006 tarih ve B.05.1.EGM.0.72.03. 06-1045-2275 sayılı yazı.

GÖNDEREN : Mustafa AYGÜN
Dışilişkiler Dairesi Başkan V.
2.Sınıf Emniyet Müdürü

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4. Sınıf Emniyet Müdürü

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657 sayılı Devlet Memurları Kanunu'nun 80. maddesine istinaden hazırlanan "Yetiştirilmek Amacıyla Yurtdışına Gönderilecek Devlet Memurları Hakkındaki Yönetmelik" hükümleri çerçevesinde yurtdışı eğitime gönderilen ve halen ABD/Kuzey Teksas Üniversitesinde doktora eğitimine devam eden 140368 sicil sayılı Emniyet Amiri Selçuk ZENGİN'in "E-öğrenme ve hizmet içi eğitim: Türk Polis Teşkilatı eğiticilerinin ve kursiyerlerinin online eğitimin hizmet içi eğitimde kullanılması ile alakalı görüşleri ve uygulamaya yönelik beklentileri" konulu anket çalışmasına ilişkin talebinin olumlu değerlendirildiğine dair olur yazısı ve onaylanmış anket suretleri ekte gönderilmiştir.

İlgi kayıtlı yazının adı geçene tebliğ edilerek, düzenlenecek olan tebellüğ belgesinin ve söz konusu çalışmanın sonuçlarının Daire Başkanlığımıza gönderilmesini rica ederim.

Mustafa AYGÜN
Dışilişkiler Dairesi Başkan V.
Dışilişkiler Dairesi Başkan Yrd.
2.Sınıf Emniyet Müdürü

Ekler :
1-Onay (1 sayfa)
2-Onaylı Anket Örneği (9 sayfa)

ADRES: Emniyet Genel Müdürlüğü, Dışilişkiler Daire Başkanlığı
İlkadım Cad. 89/10 (S.Blok) 06450 Y.Ayrancı /ANKARA

T. C.
İÇİŞLERİ BAKANLIĞI
Emniyet Genel Müdürlüğü

Sayı : B.05.1.EGM.0.72.03.06- - / ..../06/2006

Konu : Akademik Çalışma

GENEL MÜDÜRLÜK MAKAMINA

Yetiştirilmek Amacıyla Yurtdışına Gönderilecek Devlet Memurları Hakkındaki Yönetmelik" hükümleri çerçevesinde, Amerika Birleşik Devletleri Kuzey Teksas Üniversitesinde doktora eğitimi yapmakta olan 140368 sicil sayılı Emniyet Amiri Selçuk ZENGİN'in, "E-öğrenme ve Hizmetiçi Eğitim: Türk Polis Teşkilatı Eğiticilerinin ve Kursiyerlerinin Online Eğitimin Hizmetiçi Eğitimde Kullanılması İle Alakalı Görüşleri Ve Uygulamaya Yönelik Beklentileri" konulu tez çalışması ile ilgili olarak, Eğitim Daire Başkanlığınca düzenlenecek Hizmetiçi Eğitim Kurslarındaki eğitmen ve kursiyerlere yönelik anket uygulama talebinde bulunmaktadır.

Adı geçen personelin söz konusu anket çalışmasını, Eğitim Daire Başkanlığınca düzenlenecek Hizmetiçi Eğitim Kurslarındaki eğitmen ve kursiyerlere anket uygulayabilmesi hususunu onaylarınıza arz ederim.

Mustafa ÇANKAL
Eğitim Daire Başkanı
1.Sınıf Emniyet Müdürü

Uygun Görüşle Arz Ederim.
01 .../06/2006

Dr. Necati ALTINTAŞ
Emniyet Genel Müdür Yardımcısı
1.Sınıf Emniyet Müdürü

OLUR
06./06/2006

Gökhan AYDINER
Emniyet Genel Müdürü
Vali

EGITICILERIN ANKET SORULARI

Bu anket hizmet ici egitimlerin online olarak verilmesi ile alakali hizmet ici egitimleri veren egiticilerin kanaat ve tecrubelerini almak amaciyla duzenlenmistir.

Anket hakkinda bilgilendirme:

Asagidaki ifadeler hizmet ici egitimlerde online egitimin kullanilmasinda uygulanma ve benimsenme surecini gelistirmede yardimci olmasi amaciyla hazirlanmistir. Hizmet ici egitimlerde online egitimin kullanilmasi su konulari icermektedir; derslerin hazirlanmasinda online egitimin kullanilmasi, derslerin anlatiminda online egitimin kullanilmasi, ogrencilere ders icerisinde belirli online egitim teknolojilerini kullanma zorunlulugu konulmasi.

Bu 43 soruluk anketin doldurulmasi yaklasik olarak15 dakika surecektir.

Sorulara vereceginiz cevaplar bu doktora calismasina cok degerli katkilar yapacaktir, kiymetli zaman ve enerjinizi harcayacak olmanizdan dolayi minnettarim.

Lutfen cevaplarken (√) isaretini kullanin.

Lutfen asagidaki olcekten yararlanarak sorulara uygun sectiginiz cevabi veriniz:

1- Kesinlikle Katilmiyorum
2- Katilmiyorum
3- Trafsizim
4- Katiliyorum
5- Kesinlikle Katiliyorum

1.	**Genel Bakis**	1	2	3	4	5
a.	Hizmet ici egitimlerde online egitimin kullanilmasi dusuncesi ile alakali yaklasimim, kurumumun bu konu ile ilgili duzenleyecegi destek kurslarina baglidir.					
b.	Hizmet ici egitimlerde online egitimin kullanilmasi dusuncesi ile alakali yaklasimim, meslektaslarimla mesai disindaki birlikteliklerimdeki bilgi paylasimina ve onlarin destegine baglidir.					
c.	Hizmet ici egitimlerde online egitimin kullanilmasi dusuncesi ile alakali yaklasimim, tamamen bireysel ogrenme gayretime baglidir.					
d.	Hizmet ici egitimlerde online egitimin kullanilmasi ogrencilerim icin cok faydali olacagina inaniyorum.					

e.	Benim ogretim anlayisimda, ogrencilerin ogrenmesinde egitici – ogrenci iletisimi cok etkilidir.					
f.	Benim ogretim anlayisimda, ogrencilerin ogrenmesinde kendi aralarindaki iletisim cok etkilidir.					
g.	Benim ogretim anlayisimda, ogrencilerin ogrenmesinde derste anlatilan materyallere surekli ulasma imkani cok etkilidir.					
2.	**Online egitimin uygulanmasinda muhtemel engeller**	1	2	3	4	5
a.	Kisisel olarak online egitimi hizmet ici egitimlerde kullanmam icin yeterli teknolojik altyapiya sahip degilim.					
b.	Online egitimin uygulanmasinin cok pahali oldugunu dusunuyorum.					
c.	Hizmet ici egitimde online egitimin kullanilmasi, dersleri hazirlanmamda benim cok zamanimi alacagini dusunuyorum.					
d.	Hizmet ici egitimde online egitimin kullanilmasi, derslerin sunumunda cok fazla zaman harcamaya sebep olacagini dusunuyorum.					
e.	Online egitimin kullanildigi derslerde ogrenci ile iletisimin surekliliginden dolayi cok zaman harcayacagimi dusunuyorum.					
f.	Yeni teknolojileri ogrenmek icin kurum tarafindan duzenlenen profesyonel gelistirme kurslarinin cok sinirli sayida kalacagini dusunuyorum.					
g.	Online egitim teknolojisinin hizmet ici egitimde kullanilmasi icin gerekli yonetim desteginin az veya hic olmayacagini dusunuyorum.					
3.	**Online Egitimde Motivasyon**	1	2	3	4	5
a.	Online egitimin hizmet ici egitimde kullanilmasinin ogrencilerime faydali olacagini dusunuyorum.					
b.	Online egitimin hizmet ici egitimde kullanilmasi fikrinin denenmeye deger oldugunu dusunuyorum.					
c.	Egitim bilimlerinde kullanimi surekli olarak artan online egitimin kurumumuz tarafindan da kullanilmasinin kacinilmaz oldugunu dusunuyorum.					

d.	Hizmet ici egitimde online egitimin kullanilmasinin yonetim tarafindan desteklenecegini dusunuyorum.					
e.	Hizmet ici egitimde online egitimin kullanilmasinin meslektaslarim arasinda kabul gorecegini dusunuyorum.					
4.	**Online Egitimin Amaclari**	1	2	3	4	5
a.	Eger online egitimi kullanirsam, ogrencilerim icin daha faydali calismalar hazirlayabilecegimi dusunuyorum.					
b.	Eger online egitimi kullanirsam, ogrencilerim arasindaki dayanisma ve iletisimin artacagini dusunuyorum.					
c.	Eger online egitimi kullanirsam, ders materyallerinin hazirlamasi ve anlatilmasi icin daha fazla zaman harcayacagimi dusunuyorum.					
d.	Eger online egitimi kullanirsam, ogrencilerimin bireysel calismalariyla bilgiyi analiz etme ve problemlei cozme kabiliyetlerinin gelisecegini dusunuyorum.					
e.	Eger online egitimi kullanirsam, ogrencilerimle iletisimim daha da artacagini dusunuyorum..					
5.	**Kaynaklar**	1	2	3	4	5
a.	Online egitimin hizmet ici egitimde kullanilabilmesi icin yeterli bilgi birikimine sahip oldugumu dusunuyorum.					
b.	Online egitimin kullanilmasi ile ilgili ihtiyac duyulan materyallere ulasmanin kolay oldugunu dusunuyorum.					
c.	Online egitimin hizmet ici egitimde kullanilmasi icin ihtiyac duyulan programlarin kurum tarafindan saglanmasi gerektigini dusunuyorum.					
d.	Eger online egitimin kullanilmasi ile alakali teknik kurslar duzenlenecek olursa katilmak isterim.					
6.	**Online Egitimin Uygulanma Sureci**	1	2	3	4	5
a.	Derslerimde power point gibi sunum programlarini kullanabilecek bilgiye sahibim.					
b.	Derslerimde yaptigim sunumlar ve anlatimlarda sesli ve goruntulu programlari kullanabilecek bilgiye sahibim.					
c.	Derslerimde interneti kullanarak dersle alakali faydali bilgileri ogrencilerime sunabilecek bilgiye sahibim.					

d.	Eger online egitimi kullanarak ders hazirlayacak olursam ogrencilerimden sesli ve goruntulu programlari kullanmalarini isterim.					
e.	Eger online egitimi kullanarak ders hazirlayacak olursam ogrencilerimden internetten ihtiyac duyduklari bilgilere, bilimsel yayinlara ulasip onlari kullanmalarini isterim.					
f.	Eger online egitimi kullanarak ders hazirlayacak olursam ogrencilerimden aralarindaki dayanisma ,iletisim, birlikte ogrenme imkanlarini artirmak icin online iletisim programlarini (chat, e-posta vb.) kullanmalarini isterim.					
g.	Hizmet ici egitimde online egitimi kullanmanin ogrenci merkezli ogrenmeyi gelistirecegini dusunuyorum.					
7.	**Sonuclar**	1	2	3	4	5
a.	Eger kurumsal destek olursa, online egitimin hizmet ici egitimlerde kullanilmasinin daha kolay olacagina inaniyorum.					
b.	Kurs notlarimi ve egitim materyallerimi online egitimlerde kullanilacak sekle donusturmem icin bu hususlarda yardimci olacak bir destek unitesine ihtiyac duyacagimi dusunuyorum.					
c.	Ogrencilerim ve benim icin kurslar boyunca meydana gelebilecek teknik sorunlarin cozulmesinde surekli yardim alabilecegimiz haftada 7 gun ve 24 saat hizmet sunan bir yardim unitesine ihtiyac olacagini dusunuyorum.					
d.	Daha kolay bir adaptasyon icin, hem ogrencilerim hem de benim icin bir unite tarafindan, online egitimlerle alakali teknik kurslar duzenlenmesi gerekliligine inaniyorum.					
e.	Online egitim tekniklerinin hizmet ici egitimlerde kullanilmasinin ogrencilerimin ogrenmelerinde olumlu bir etki yapacagini dusuniyorum.					
f.	Hizmet ici egitmlerin online olarak verilmesinin faydali olacagini dusunuyorum.					
g.	Hizmet ici egitimlerinin online olarak yapilmasinin ancak dogru yontemler ve programlar kullanilirsa faydali olacagina inaniyorum.					
h.	Online egitimle alakali herturlu yorum ve tavsiyeleriniz icin, lutfen asagidaki boslugu kullaniniz.					

8. Sayisal Bilgiler

I. _____Cinsiyetim; A. Erkek B. Kadin	III. _____Rutbem ; A. Polis Memuru B. Komiser Yardimcisi C. Komiser. D. Baskomiser E. Emniyet Amiri. F. 4.Sinif Emniyet Muduru. G. 3.Sinif Emniyet Muduru H. 2.Sinif Emniyet Muduru. I. 1.Sinif Emniyet Muduru J. Ogretim Gorevlisi
II. _____ Yasim; A. <30 B. 30-39 C. 40-49 D. 50-59 E. >59	IV. _____Egitim Durumum; A. Ilkokul B. Orta okul C. Lise D. 2 yillik Universite E. 4 yillik Universite F. Master G. Doktora

V. Asagidaki asamalardan hangisi online egitimin hizmet ici egitimde kullanilmasi surecinde sizin durumunuzu ifade etmektedir?

A. **Farkindalik** - Online egitimin ne oldugunu, temel bazi teknik altyapi gerektirdigini ve bunun teknik yardim almadan yapamayacagimi dusunuyorum
B. ***Ogrenme Sureci*** - *Temel bilgisayar programlarini ve standart bilgisayar* donanimlarini kullanabilirim.
C. **Anlama ve Uygulama Sureci** - Derslerimi hazirlarken cok degisik teknoljileri, programlari, ogretim araclarini kullanirim
D. **Yenilikleri Kolayca Uygulayabilme** - Derslerimde yeni teknolojileri kullanmada basarili oldugumu dusunuyorum.
E. **Kolaylastirma Sureci**- Dersleri hazirlarken teknolojiyi kullanma tecrubelerimi meslektaslarimla paylasmaya ve onlara destek olmaya istekliyimdir.

KURSIYERLERIN ANKET SORULARI

Bu anket hizmet ici egitimlerin online olarak verilmesi ile alakali hizmet ici egitimlere katilan kursiyerlerin kanaat ve tecrubelerini almak amaciyla duzenlenmistir.

Anket hakkinda bilgilendirme:

Asagidaki ifadeler hizmet ici egitimlerin online olarak verilmesi ile alakali olarak hizmet ici egitimlere katilan kursiyerlerin kanaat ve tecrubelerini almak amaciyla duzenlenmistir.

Bu 24 soruluk anketin doldurulmasi yaklasik olarak10 dakika surecektir.

Sorulara vereceginiz cevaplar bu doktora calismasina cok degerli katkilar yapacaktir, kiymetli zaman ve enerjinizi harcayacak olmanizdan dolayi minnettarim.

Lutfen cevaplarken (√) isaretini kullanin.

Lutfen asagidaki olcekten yararlanarak sorulara uygun sectiginiz cevabi veriniz.

1- Kesinlikle Katilmiyorum
2- Katilmiyorum
3- Trafsizim
4- Katiliyorum
5- Kesinlikle Katiliyorum

		1	2	3	4	5
1.	Hizmet ici egitimlerin online olarak verilmesi durumunda yeterli kisisel teknik alt yapiya sahip oldugumu dusunmuyorum.					
2.	Hizmet ici egtimlerinin online olarak verilmesi durumunda gerekli olan altyapi ve bilgi icin kurumun saglayacagi teknik destek kurslarina ihtiyacim olacaktir.					
3.	Hizmet ici egitimin online olarak verilmesi durumunda teknik sorunlarla alakali haftanin 7 gunu ve 24 saat hizmet veren teknik destek unitesine ihtiyac olacagini dusunuyorum.					
4.	Hizmet ici egitimlerin online olarak verilmesinin benim icin cok faydali olacagini dusunuyoru.					
5.	Hizmet ici egitimlerin online olarak verilmesi durumunda daha fazla kurs acilabilecegini dusunuyorum.					
6.	Hizmet ici egitimlerin online olarak verilmesi durumunda daha fazla kursa katilabilecegimi dusunuyorum.					

		1	2	3	4	5
7.	Hizmet ici egitimlerin online olarak verilmesi durumunda dersler icin daha cok gayret sarfetmem ve daha fazla zaman harcamam gerekecegini dusunuyorum.					
8.	Internet baglantim yok.					
9.	Hizmet ici egitimlerin online olarak verilmesi durumunda kurs arkadaslarimla iletisim icerisinde olmanin cok zamanimi alacagini dusunuyorum.					
10.	Hizmet ici egitimlerin online olarak verilmesi durumunda kurumun bu yeni teknolojiyi ogrenmede cok sinirli olarak gelistirme programlari duzenleyecegini dusunuyorum.					
11.	Hizmet ici egitimlerin online olarak verilmesi durumunda, yonetim tarafindan cok az veya hic desteklenmeyecegini dusunuyorum.					
12.	Hizmet ici egitimlerin online olarak verilmesi denemeye deger bir yenilik oldugunu dusunuyorum.					
13.	Hizmet ici egitimlerin online olarak verilmesinin kacinilmaz yeni bir egitim yontemi oldugunu dusunuyorum.					
14.	Hizmet ici egitimlerin online olarak verilmesi durumunda ogrenci olarak yonetim tarafindan desteklenecegimi dusunuyorum.					
15.	Hizmet ici egitimlerin online olarak verilmesi durumunda kursiyerler tarafindan kabul gorecegini dusunuyorum.					
16.	Hizmet ici egitimlerin online olarak verilmesi durumunda sinif arkadaslarimla olan iletisimim artacagini dusunuyorum.					
17.	Kurumsal destek olmasi durumunda hizmet ici egitimlerin online olarak verilmesi icin uygulamaya gecis surecinin daha hizli olacagini dusunuyorum.					
18.	Teknik problemlerle alakali haftanin 7 gunu ve 24 saat hizmet verebilecek bir yardim unitesinin kurulmasi gerektigini dusunuyorum.					
19.	Online egitimin uygulanma surecinde teknik egitim kurslarini veren bir unitenin kurulmasi gerektigini dusunuyorum.					
20.	Hizmet ici egitimlerin online olarak verilmesinin ogrencinin ogrenmesi uzerinde olumlu etkisi olacagini dusunuyorum.					

		1	2	3	4	5
21.	Hizmet ici egitimlerin online olarak verilmesinin ogrencinin diger ogrencilerle iletisim kurmasi acisindan olumlu etkisi olacagini dusunuyorum.					
22.	Hizmet ici egitmlerin online olarak verilmesinin faydali olacagini dusunuyorum.					
23.	Hizmet ici egitimlerinin online olarak yapilmasinin ancak dogru yontemler ve programlar kullanilirsa faydali olacagina inaniyorum.					
24.	Online egitimle alakali herturlu yorum ve tavsiyeleriniz icin, lutfen asagidaki boslugu kullaniniz.					

		1	2	3	4	5
21.	Hizmet ici egitimlerin online olarak verilmesinin ogrencinin diger ogrencilerle iletisim kurmasi acisindan olumlu etkisi olacagini dusunuyorum.					
22.	Hizmet ici egitmlerin online olarak verilmesinin faydali olacagini dusunuyorum.					
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24.	Online egitimle alakali herturlu yorum ve tavsiyeleriniz icin, lutfen asagidaki boslugu kullaniniz.					

8. Sayisal Bilgiler

I. _____Cinsiyetim; A. Male. B. Female.	III. _____Rutbem ; A. Polis Memuru B. Komiser Yardimcisi C. Komiser. D. Baskomiser E. Emniyet Amiri. F. 4.Sinif Emniyet Muduru. G. 3.Sinif Emniyet Muduru H. 2.Sinif Emniyet Muduru. I. 1.Sinif Emniyet Muduru J. Ogretim Gorevlisi
II. _____ Yasim; A. <30 B. 30-39 C. 40-49 D. 50-59 E. >59	IV. _____Egitim Durumum; A. Ilkokul B. Orta okul C. Lise D. 2 yillik Universite E. 4 yillik Universite F. Master G. Doktora

APPENDIX F

CORRELATION MATRIX OF THE ITEM OF A SCALE FOR TRAINERS

	Q1A	Q1B	Q1C	Q1D	Q1E
Q1A	1				
Q1B	0.6618	1			
Q1C	0.499	0.4263	1		
Q1D	0.5156	0.5627	0.4767	1	
Q1E	0.4878	0.6197	0.3665	0.3798	1
Q1F	0.6714	0.6944	0.673	0.5623	0.636
Q1G	0.3822	0.5605	0.364	0.3294	0.6504
Q2A	0.0665	0.2259	-0.1437	-0.1596	0.1587
Q2B	0.5937	0.6964	0.4805	0.6408	0.5481
Q2C	0.519	0.5975	0.4779	0.4904	0.4284
Q2D	0.4778	0.6637	0.4965	0.4742	0.5512
Q2E	0.4966	0.6877	0.4331	0.4935	0.2825
Q2F	0.6516	0.5106	0.4726	0.4929	0.2925
Q2G	0.56	0.7024	0.4441	0.5923	0.4252
Q3A	0.4727	0.4588	0.3908	0.6307	0.1777
Q3B	0.3326	0.1823	0.195	0.5137	0.0687
Q3C	0.4288	0.2665	0.2949	0.348	0.0277
Q3D	0.2296	0.1922	0.2646	0.2264	0.0409
Q3E	0.4864	0.5055	0.3562	0.578	0.1666
Q4A	0.3813	0.4392	0.2874	0.4617	0.1132
Q4B	0.6203	0.5299	0.3408	0.556	0.1379
Q4C	0.4036	0.3448	0.5846	0.3718	0.0816
Q4D	0.6174	0.452	0.4884	0.4105	0.2634
Q4E	0.6134	0.5581	0.4651	0.6833	0.2974

Q5A	0.6371	0.6498	0.5947	0.5052	0.3553
Q5B	0.6048	0.6911	0.5031	0.5806	0.2271
Q5C	0.4145	0.4496	0.3208	0.5211	0.137
Q5D	0.5195	0.4571	0.2796	0.3507	0.2885
Q6A	0.4707	0.4271	0.4237	0.5598	0.1345
Q6C	0.2202	0.2323	0.1131	0.4724	0.0053
Q6D	0.227	0.3718	0.2847	0.4905	0.1541
Q6E	0.3854	0.4332	0.3369	0.4372	0.2461
Q6F	0.4114	0.3702	0.3134	0.3425	0.2679
Q6G	0.4797	0.4594	0.3184	0.6296	0.1451
Q7A	0.448	0.4409	0.1561	0.4796	0.223
Q7B	0.2661	0.2143	0.2974	0.6515	0.0452
Q7C	0.3451	0.4861	0.4227	0.5304	0.2631
Q7D	0.5727	0.5714	0.2818	0.3291	0.5008
Q7E	0.3184	0.4201	0.3601	0.552	0.2521
Q7F	0.3698	0.4207	0.4721	0.5537	0.3
Q7G	0.4541	0.4951	0.3852	0.59	0.4447

	Q1F	Q1G	Q2A	Q2B	Q2C
Q1F	1				
Q1G	0.4926	1			
Q2A	0.0169	0.1717	1		
Q2B	0.5609	0.4434	0.2344	1	
Q2C	0.4528	0.3632	0.2413	0.8295	1
Q2D	0.4892	0.3912	0.317	0.8577	0.7656
Q2E	0.4251	0.3107	0.4158	0.7698	0.7728
Q2F	0.4781	0.2704	0.2064	0.5911	0.5983
Q2G	0.5284	0.4634	0.2607	0.7089	0.7015
Q3A	0.489	0.4285	-0.0277	0.4556	0.3007
Q3B	0.2041	0.4294	0.0876	0.2944	0.229
Q3C	0.3241	0.4079	0.1034	0.2769	0.3211
Q3D	0.2462	0.153	0.0139	0.333	0.4029
Q3E	0.3785	0.303	-0.0895	0.5748	0.5369
Q4A	0.483	0.2737	0.0269	0.3833	0.4182
Q4B	0.4868	0.1721	-0.0514	0.561	0.5601
Q4C	0.4162	0.3706	0.0208	0.4316	0.4799
Q4D	0.5544	0.3434	-0.0409	0.5176	0.4702
Q4E	0.5752	0.3635	-0.077	0.6501	0.6871
Q5A	0.5744	0.4912	0.0334	0.5554	0.572
Q5B	0.4428	0.4219	-0.03	0.5235	0.4619
Q5C	0.3882	0.2338	0.0241	0.4875	0.4496
Q5D	0.3711	0.1589	0.2006	0.3756	0.4155
Q6A	0.4369	0.3473	-0.1909	0.396	0.4677
Q6C	0.186	0.0818	0.0227	0.3568	0.3948
Q6D	0.2737	0.2213	-0.0496	0.3788	0.5381

Q6E	0.3978	0.3339	0.111	0.3716	0.4903
Q6F	0.3694	0.212	0.1631	0.3631	0.4929
Q6G	0.3379	0.3468	-0.104	0.414	0.3995
Q7A	0.4005	0.4358	0.1226	0.3372	0.3934
Q7B	0.2355	0.0632	-0.2215	0.4283	0.3451
Q7C	0.3971	0.3629	0.1136	0.5658	0.4848
Q7D	0.4372	0.1915	0.2676	0.4432	0.5552
Q7E	0.4441	0.2273	-0.1367	0.4185	0.4086
Q7F	0.4724	0.2722	-0.2187	0.4605	0.5024
Q7G	0.5771	0.2956	-0.1504	0.4694	0.4985

	Q2D	Q2E	Q2F	Q2G	Q3A
Q2D	1				
Q2E	0.8276	1			
Q2F	0.5807	0.6293	1		
Q2G	0.6223	0.7038	0.6711	1	
Q3A	0.4234	0.4372	0.409	0.4033	1
Q3B	0.1663	0.2228	0.3738	0.3529	0.7587
Q3C	0.302	0.3788	0.4925	0.3769	0.7137
Q3D	0.4128	0.2899	0.2903	0.195	0.5348
Q3E	0.5435	0.6028	0.6023	0.4373	0.5794
Q4A	0.3765	0.4472	0.5139	0.4956	0.6654
Q4B	0.5187	0.5383	0.6289	0.6738	0.5568
Q4C	0.4414	0.4363	0.5241	0.463	0.5034
Q4D	0.517	0.4835	0.679	0.4308	0.6182
Q4E	0.5066	0.576	0.6408	0.6927	0.4829
Q5A	0.6123	0.5942	0.5536	0.6282	0.545

Q5B	0.4958	0.6306	0.5058	0.6518	0.5364
Q5C	0.4808	0.486	0.467	0.4564	0.6022
Q5D	0.3774	0.3984	0.586	0.4721	0.3613
Q6A	0.2895	0.3381	0.4599	0.5545	0.612
Q6C	0.2908	0.3179	0.4273	0.4926	0.4296
Q6D	0.4145	0.4089	0.3244	0.5192	0.4397
Q6E	0.4543	0.4072	0.4538	0.4184	0.6658
Q6F	0.5222	0.4566	0.4236	0.5066	0.4402
Q6G	0.2696	0.3662	0.4737	0.627	0.535
Q7A	0.3008	0.3675	0.4193	0.4536	0.6264
Q7B	0.2414	0.2297	0.2796	0.333	0.5709
Q7C	0.5782	0.5729	0.5295	0.3612	0.5376
Q7D	0.5706	0.5328	0.483	0.5126	0.3185
Q7E	0.3901	0.3379	0.419	0.4272	0.4664
Q7F	0.4522	0.3891	0.4243	0.3257	0.57
Q7G	0.4214	0.3888	0.3764	0.3496	0.5063

	Q3B	Q3C	Q3D	Q3E	Q4A
Q3B	1				
Q3C	0.7281	1			
Q3D	0.3969	0.5362	1		
Q3E	0.3698	0.6302	0.5634	1	
Q4A	0.5288	0.6327	0.5413	0.5195	1
Q4B	0.4319	0.5859	0.4981	0.652	0.645
Q4C	0.3704	0.6461	0.4293	0.5912	0.4138
Q4D	0.526	0.5692	0.4532	0.6037	0.5322
Q4E	0.5159	0.4986	0.3308	0.5799	0.6102
Q5A	0.4515	0.6119	0.4474	0.5975	0.558
Q5B	0.3218	0.4707	0.3137	0.6847	0.5134
Q5C	0.352	0.6089	0.4585	0.6678	0.3496
Q5D	0.3111	0.4198	0.2705	0.2994	0.5028
Q6A	0.4894	0.6727	0.4749	0.5974	0.6654
Q6C	0.4259	0.5381	0.4377	0.5334	0.5069
Q6D	0.3984	0.5813	0.5926	0.5508	0.6215
Q6E	0.5734	0.6927	0.72	0.5395	0.654
Q6F	0.3166	0.5365	0.4964	0.3921	0.5124
Q6G	0.6356	0.4771	0.2474	0.4434	0.5277
Q7A	0.556	0.7883	0.4507	0.6648	0.6287
Q7B	0.5783	0.4323	0.3352	0.466	0.3706
Q7C	0.3413	0.4689	0.5047	0.6936	0.4531
Q7D	0.1912	0.2467	0.2193	0.2018	0.4279
Q7E	0.2926	0.3752	0.4654	0.5172	0.6619
Q7F	0.3093	0.4152	0.5547	0.6265	0.4684
Q7G	0.2529	0.3099	0.4169	0.5121	0.4367

	Q4B	Q4C	Q4D	Q4E	Q5A
Q4B	1				
Q4C	0.61	1			
Q4D	0.6546	0.555	1		
Q4E	0.7832	0.4999	0.6958	1	
Q5A	0.726	0.5887	0.682	0.7065	1
Q5B	0.6534	0.5496	0.4137	0.5392	0.7539
Q5C	0.5498	0.575	0.3884	0.4386	0.4464
Q5D	0.3241	0.1945	0.3923	0.3609	0.4529
Q6A	0.6768	0.5937	0.4034	0.6396	0.6241
Q6C	0.6087	0.42	0.2388	0.5298	0.3589
Q6D	0.606	0.4149	0.2608	0.5849	0.5526
Q6E	0.5327	0.4519	0.5385	0.5037	0.6021
Q6F	0.6323	0.4549	0.3758	0.5496	0.5489
Q6G	0.6631	0.2609	0.4047	0.7464	0.5869
Q7A	0.5689	0.4564	0.3836	0.5024	0.5369
Q7B	0.4844	0.339	0.2858	0.4847	0.3775
Q7C	0.3869	0.3677	0.4046	0.4315	0.4499
Q7D	0.4372	0.1105	0.4091	0.4656	0.501
Q7E	0.5273	0.3131	0.2578	0.5122	0.4462
Q7F	0.4526	0.5073	0.4771	0.527	0.4176
Q7G	0.3525	0.2761	0.4373	0.5326	0.4098

	Q5B	Q5C	Q5D	Q6A	Q6C
Q5B	1				

Q5C	0.5144	1			
Q5D	0.3119	0.3344	1		
Q6A	0.6023	0.5714	0.4612	1	
Q6C	0.4071	0.7513	0.2838	0.6319	1
Q6D	0.4881	0.5213	0.4237	0.7499	0.6748
Q6E	0.39	0.5491	0.6483	0.692	0.5157
Q6F	0.412	0.5932	0.386	0.6291	0.6432
Q6G	0.6008	0.4143	0.2684	0.6202	0.5562
Q7A	0.555	0.6315	0.3739	0.6974	0.6273
Q7B	0.4005	0.5866	0.2811	0.5583	0.6324
Q7C	0.5105	0.6364	0.3353	0.4627	0.4504
Q7D	0.3361	0.2798	0.6485	0.3221	0.1991
Q7E	0.5377	0.4277	0.3151	0.6081	0.4749
Q7F	0.4458	0.6616	0.2912	0.5361	0.4748
Q7G	0.3929	0.5341	0.4563	0.4664	0.3564

	Q6D	Q6E	Q6F	Q6G	Q7A
Q6D	1				
Q6E	0.7911	1			
Q6F	0.7279	0.68	1		
Q6G	0.5682	0.4164	0.4864	1	
Q7A	0.6817	0.6566	0.5861	0.5611	1
Q7B	0.5052	0.4062	0.3802	0.5982	0.4646
Q7C	0.4739	0.5162	0.4555	0.4261	0.5382
Q7D	0.4107	0.531	0.6749	0.3691	0.3511
Q7E	0.6549	0.5005	0.5324	0.5531	0.5678
Q7F	0.5281	0.5795	0.5309	0.3452	0.457

Q7G	0.5053	0.6054	0.4577	0.3027	0.4792
	Q7B	Q7C	Q7D	Q7E	Q7F
Q7B	1				
Q7C	0.5141	1			
Q7D	0.2204	0.3667	1		
Q7E	0.5838	0.6699	0.406	1	
Q7F	0.5607	0.6816	0.4165	0.6815	1
Q7G	0.4565	0.5316	0.5209	0.6237	0.8422
	Q7G				
Q7G	1				

APPENDIX G

CORRELATION MATRIX OF THE ITEM OF A SCALE FOR TRAINEES

	PERSONAL	SUPTRAIN	SUPPUNIT	PERSBENF	EXTRTRNG
PERSONAL	1				
SUPTRAIN	0.469	1			
SUPPUNIT	0.2677	0.4659	1		
PERSBENF	0.1507	0.2388	0.2218	1	
EXTRTRNG	0.0379	0.0677	0.2526	0.5951	1
MOREPRT	0.0468	0.0494	0.2439	0.6485	0.7313
EXTRTIME	0.1902	0.1793	0.2483	0.1342	0.0542
REQINTER	-0.0491	-0.0752	-0.003	0.0472	0.021
NOCONCT	0.31	0.2873	0.18	0.0494	-0.0652
COMTIME	0.1382	0.1498	0.2234	0.0405	0.1008
LIMITTR	0.1982	0.2217	0.2263	0.1405	0.1384
LESSUPP	0.047	0.1402	0.195	0.1599	0.1213
WRTHTRY	0.0883	0.1924	0.2123	0.5234	0.5498
MSTTRY	0.0687	0.1869	0.2906	0.5813	0.6248
ADMNSUP	0.2428	0.2956	0.3402	0.4265	0.3695
TRNEEACP	0.1972	0.118	0.272	0.5268	0.577
INCRCOM	0.2733	0.3825	0.2416	0.44	0.3512
FSTAPPLY	0.2068	0.1988	0.2357	0.4239	0.4699
HLPDESK	0.2569	0.3283	0.4124	0.2934	0.3901
SPTRNUNT	0.1931	0.2096	0.3002	0.4001	0.5391
POSEFFCT	0.2257	0.2644	0.2226	0.4984	0.504
POSCOMM	0.2222	0.338	0.3107	0.2845	0.1929
USEFUL	0.1565	0.2187	0.2672	0.6299	0.5152
RIGHTAPL	0.0784	0.1849	0.339	0.3781	0.4904

	MOREPRT	EXTRTIME	REQINTER	NOCONCT	COMTIME

MOREPRT	1				
EXTRTIME	0.1566	1			
REQINTER	0.0451	-0.0078	1		
NOCONCT	-0.1051	0.3394	-0.1021	1	
COMTIME	0.0808	0.3941	-0.0222	0.2646	1
LIMITTR	0.1208	0.2888	0.0264	0.1161	0.5518
LESSUPP	0.0824	0.383	-0.0968	0.2901	0.4466
WRTHTRY	0.5531	0.0854	-0.0925	-0.0798	-0.0935
MSTTRY	0.6189	0.1459	-0.068	-0.0431	0.0068
ADMNSUP	0.3225	0.2107	-0.0009	0.1333	0.0948
TRNEEACP	0.6214	0.0999	-0.0008	0.0454	0.0141
INCRCOM	0.3461	0.2172	-0.1236	0.2033	0.0447
FSTAPPLY	0.4453	0.043	-0.1045	-0.089	-0.0541
HLPDESK	0.3316	0.1893	-0.0423	0.0898	0.0681
SPTRNUNT	0.5456	0.2849	-0.0623	-0.0483	0.0811
POSEFFCT	0.5711	0.2207	-0.0415	-0.0272	0.0288
POSCOMM	0.2724	0.3092	-0.0844	0.2212	0.102
USEFUL	0.5923	0.1939	-0.0217	-0.0119	-0.0011

	MOREPRT	EXTRTIME	REQINTER	NOCONCT	COMTIME
RIGHTAPL	0.5702	0.1679	-0.0222	-0.0823	0.1076

	LIMITTR	LESSUPP	WRTHTRY	MSTTRY	ADMNSUP
LIMITTR	1				
LESSUPP	0.5315	1			
WRTHTRY	0.1105	-0.0206	1		
MSTTRY	0.0984	0.0798	0.698	1	

ADMNSUP	0.1301	0.2163	0.2866	0.3611	1
TRNEEACP	0.0483	-0.0078	0.5185	0.5704	0.5354
INCRCOM	0.0611	0.0168	0.2697	0.3706	0.5138
FSTAPPLY	-0.0623	0.0125	0.5054	0.5713	0.2722
HLPDESK	0.2163	0.1533	0.3774	0.398	0.2984
SPTRNUNT	0.1171	0.0579	0.5093	0.5543	0.2575
POSEFFCT	0.0833	-0.0445	0.604	0.6037	0.2893
POSCOMM	0.0297	0.1517	0.2769	0.3776	0.4529
USEFUL	0.1193	0.0998	0.5811	0.5844	0.3044
RIGHTAPL	0.178	0.0617	0.4953	0.5546	0.187

	TRNEEACP	INCRCOM	FSTAPPLY	HLPDESK	SPTRNUNT
TRNEEACP	1				
INCRCOM	0.492	1			
FSTAPPLY	0.5726	0.3914	1		
HLPDESK	0.341	0.2579	0.3839	1	
SPTRNUNT	0.4108	0.3305	0.5166	0.5848	1
POSEFFCT	0.5037	0.4592	0.5434	0.4731	0.7065
POSCOMM	0.4225	0.6223	0.3882	0.3328	0.3875
USEFUL	0.5788	0.4144	0.5497	0.3318	0.6161
RIGHTAPL	0.4405	0.2014	0.5133	0.4344	0.556

	POSEFFCT	POSCOMM	USEFUL	RIGHTAPL
POSEFFCT	1			
POSCOMM	0.4908	1		
USEFUL	0.7291	0.5361	1	
RIGHTAPL	0.5952	0.3573	0.5795	1

APPENDIX H

ROTATED COMPONENT MATRIX FOR TRAINERS

Summary of the Varimax Rotated Component Matrix (a)

	Component				
	1	2	3	4	5
I believe that using e-learning technology is an inevitable educational trend.	**.875**	.131	.188	7.878E-02	.175
I see e-learning technology in in-service training as a welcome challenge.	**.801**	2.657E-02	8.703E-02	.170	2.539E-02
I would use technology enhanced presentations (e.g., PowerPoint) as a strategy for my class delivery.	**.693**	.276	.446	.114	-5.694E-02
I believe that if I have institutional support I can easily adopt e-learning technology in in-service training.	**.686**	.177	.395	.103	.187
E-learning technology integration will benefit my students.	**.684**	.126	.339	.346	-2.924E-03
I would use general multimedia technology tools (e.g., audio, video) within my presentations during my class delivery.	**.680**	.373	.346	7.956E-02	-7.162E-02
If I use e-learning technology, I will be able to present more complex work to my students.	**.633**	.190	.353	.189	.202
I would require the use of content-specific Internet resources (e.g., sites, databases, and journal) within my discipline area by my students.	**.608**	4.286E-02	.520	.226	.430

Using e-learning technology in in-service training would encourage more student centered learning.	**.575**	.420	.234	.125	-.149
I have sufficient knowledge of a range of e-learning technology resources for effective in-service training.	**.547**	.492	.145	.414	9.369E-02
If I use e-learning technology, I will spend more time preparing materials and resources for instruction.	**.540**	.449	.145	.136	-8.641E-02
If I use e-learning technology, my students will show improvement in learning tasks, such as analyzing data, or solving problems.	**.516**	.320	8.094E-02	.482	6.213E-02
Using e-learning technology means to communicate with my students will require too much of my time.	.130	**.785**	.178	.205	.346
E-learning technology is considered too costly to implement.	7.212E-02	**.746**	.272	.393	.142
There will be little or no administrative support for the integration of e-learning technology in in-service training.	.316	**.741**	.109	.264	.190
E-learning technology integration in in-service training will require too much of my class preparation time.	.104	**.703**	.331	.253	.294
E-learning technology integration will require too much time within course delivery.	1.997E-02	**.679**	.289	.355	.372
It is generally easy to obtain the resources I need for e-learning technology integration.	.424	**.604**	.218	.255	-.121

If I use e-learning technology, I expect an increased level of collaboration among my students.	.574	**.597**	.261	8.531E-02	6.739E-03
There are limited institutional professional development opportunities to learn about new technology at my organization.	.365	**.595**	.133	.283	.207
If I use e-learning technology, my interaction with students will increase.	.467	**.571**	.279	.310	-5.043E-02
I believe that e-learning technology integration in in-service training will be accepted among my peers.	.455	**.495**	.443	.124	-6.956E-02
I believe that e-learning technology integration in in-service training will be very important for my students.	.304	**.457**	.445	.373	-.242
I believe that e-learning would benefit TNP in-service training.	.203	.182	**.802**	.319	-6.196E-02
With the right tool e-learning would benefit TNP training.	.111	9.405E-02	**.749**	.492	7.090E-02
I believe that using e-learning technology for in-service training would have a positive effect on student learning.	.266	.225	**.724**	.184	-3.075E-02
I would require the use of general multimedia technology tools (e.g., audio, video) by my students.	.494	.256	**.625**	-5.985E-02	.215
I believe that a help desk (24/7) would be needed to help me and my students resolve technical problems.	.224	.357	**.609**	.203	.105

I believe that a department would be needed to help me digitize my course content.	.394	.245	**.595**	-1.720E-02	-.265
My department should provide access to instructional technology support.	.392	.406	**.561**	3.481E-03	3.904E-02
I would use content-specific Internet resources (e.g. multimedia, databases) within my presentations during my class delivery.	.495	.379	**.528**	-.297	5.298E-02
I believe that I will receive administrative support to use e-learning technology in in-service training.	.448	4.990E-02	**.521**	2.264E-02	.245
I would require the use of online communication (e.g., email, chat, instant messaging) by my students to foster group collaboration in learning group discussion.	.411	.297	**.508**	3.516E-02	.405
My teaching philosophy reflects my beliefs that students learn most effectively through teacher-student interaction.	-.140	.196	.150	**.769**	.229
My teaching philosophy reflects my beliefs that students learn most effectively through student-student interaction.	.204	.299	.228	**.752**	-2.119E-03
My teaching philosophy reflects my beliefs that students learn most effectively when provided opportunities to interact with content and construct their own learning.	.338	.166	-5.357E-02	**.624**	7.813E-02
My knowledge and strategies of e-learning technology integration in in-service training	.341	.451	6.190E-02	**.587**	8.368E-02

would depend on institution-provided professional development.					
My knowledge and strategies of e-learning technology integration in in-service training would depend on informal collegial instruction or support.	.141	.569	.184	**.578**	.197
My knowledge and strategies of e-learning technology integration in in-service training would depend on self-taught.	.175	.384	.199	**.556**	-.192
I do not have enough personal technology skill to integrate e-learning technology in in-service training.	-3.465E-02	.244	-.279	-5.591E-02	**.758**
I believe that a department would be needed to provide me and my students' technical training for easy integration of e-learning.	8.641E-02	.269	.333	.413	**.577**
I would participate more in technical or technology integration training, if it was available.	.318	.139	.251	.323	**.497**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A Rotation converged in 17 iterations.

APPENDIX I

ROTATED COMPONENT MATRIX FOR TRAINEES

Summary of the Varimax Rotated Component Matrix(a)

	Component		
	1	2	3
Recoded trneeacp	**.902**	.275	.141
Recoded poscomm	**.852**	.147	.311
Recoded useful	**.789**	.370	.290
Recoded incrcom	**.763**	.454	-1.738E-02
Recoded fstapply	**.758**	.506	3.115E-02
Recoded persbenf	**.702**	.375	.291
Recoded moreprt	**.697**	.484	.282
Recoded extrtrng	**.696**	.513	.240
Recoded suppunit	**.656**	.356	.394
Recoded admnsup	**.508**	.371	.294
Recoded required internet	**-.458**	-6.606E-03	.300
Recoded suptrain	.182	**.830**	4.341E-02
Recoded personal	.206	**.809**	5.227E-02
Recoded hlpdesk	.437	**.762**	.161
Recoded sptrnunt	.529	**.750**	.174
Recoded poseffct	.559	**.744**	.168
Recoded wrthtry	.541	**.725**	.201
Recoded rightapl	.407	**.576**	.496
Recoded msttry	.373	**.476**	.343
Recoded extratime	5.633E-02	.166	**.852**
Recoded comtime	.137	.155	**.737**
Recoded lessupp	.248	.102	**.726**

Recoded limittr	-.134	.475	**.699**
Recoded noconct	.208	-.118	**.553**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A Rotation converged in 6 iterations.

APPENDIX J

t-TEST RESULTS FOR TRAINERS AND TRAINEES' RESPONSES

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I personally do not have enough technological skills to participate in e-learning for in-service training.	1	168	2.93	.775	.060
	2	203	2.38	1.134	.080

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I personally do nc enough technolog skills to participat e-learning for in-s training.	Equal varian assumed	67.355	.000	5.389	369	.000	.56	.103	.353	.758
	Equal varian not assumed			5.577	356.838	.000	.56	.100	.359	.751

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
My knowledge and technological skills to participate in e-learning for in-service training would depend on institution-provided professional development.	1	180	3.06	.866	.065
	2	217	2.85	.961	.065

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
My knowledge an technological skill participate in e-lea for in-service train would depend on institution-provide professional development.	Equal varian assumed	2.733	.099	2.251	395	.025	.21	.093	.026	.391
	Equal varian not assumed			2.273	392.217	.024	.21	.092	.028	.389

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that e-learning technology integration in in-service training will be very useful for me.	1	168	3.32	.792	.061
	2	204	3.00	.926	.065

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that e-lea technology integra in in-service traini be very useful for	Equal varian assumed	.004	.947	3.555	370	.000	.32	.090	.144	.499
	Equal varian not assumed			3.609	369.467	.000	.32	.089	.146	.497

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
E-learning technology integration in in-service training would require too much effort and time from me.	1	164	2.51	.755	.059
	2	180	2.62	.885	.066

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
E-learning techn integration in in-s training would re too much effort a time from me.	Equal varian assumed	4.163	.042	-1.234	342	.218	-.11	.089	-.285	.065
	Equal varian not assumed			-1.243	340.552	.215	-.11	.089	-.284	.064

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
Using e-learning technology to communicate with my course mates will require too much of my time.	1	136	2.43	.823	.071
	2	192	2.47	.986	.071

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
Using e-learning technology to communicate with course mates will r too much of my tim	Equal varian assumed	9.166	.003	-.388	326	.698	-.04	.103	-.243	.163
	Equal varian not assumed			-.400	317.331	.689	-.04	.100	-.237	.157

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
There would be limited institutional professional development opportunities to learn about new technology at my organization.	1	156	2.74	.780	.062
	2	178	2.65	.872	.065

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
There would be lin institutional profes development opportunities to le about new technol my organization.	Equal varian assumed	4.911	.027	1.000	332	.318	.09	.091	-.088	.270
	Equal varian not assumed			1.008	331.868	.314	.09	.090	-.087	.269

t-Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
There would be little or no administrative support for the integration of e-learning technology in in-service training.	1	140	2.49	.909	.077
	2	197	2.58	.904	.064

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
There would be littl administrative supp the integration of e-learning technolc in-service training.	Equal varian assumed	.020	.889	-.928	335	.354	-.09	.100	-.290	.104
	Equal varian not assumed			-.927	298.312	.355	-.09	.100	-.290	.104

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I would see e-learning technology in in-service training as a welcome challenge.	1	180	3.51	.584	.044
	2	206	3.26	.866	.060

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I would see e-lea technology in in-service trainin a welcome challe	Equal varian assumed	11.893	.001	3.190	384	.002	.24	.076	.093	.393
	Equal varian not assumed			3.272	361.588	.001	.24	.074	.097	.390

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that using e-learning technology is an inevitable educational trend.	1	176	3.59	.537	.041
	2	197	3.02	.939	.067

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that usi e-learning techn is an inevitable educational tren	Equal varian assumed	10.698	.001	7.151	371	.000	.58	.081	.417	.734
	Equal varian not assumed			7.359	318.104	.000	.58	.078	.422	.730

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that I would receive administrative support to use e-learning technology in in-service training.	1	160	3.33	.651	.051
	2	165	2.58	.945	.074

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that I wo receive administra support to use e-learning techno in in-service traini	Equal varianc assumed	32.277	.000	8.370	323	.000	.76	.090	.578	.933
	Equal varianc not assumed			8.416	291.879	.000	.76	.090	.579	.932

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that e-learning technology integration in in-service training would be accepted among my colleagues.	1	164	3.10	.732	.057
	2	164	2.80	.915	.071

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that e-lea technology integra in in-service traini would be accepte among my colleag	Equal varianc assumed	4.777	.030	3.334	326	.001	.30	.091	.125	.485
	Equal varianc not assumed			3.334	310.991	.001	.30	.091	.125	.485

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
If I use e-learning technology, my interaction with course mates would increase.	1	152	2.79	.769	.062
	2	177	2.35	.930	.070

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
If I use e-learning technology, my interaction with c mates would incr	Equal varian assumed	13.849	.000	4.621	327	.000	.44	.095	.252	.626
	Equal varian not assumed			4.688	326.541	.000	.44	.094	.255	.623

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that if I had institutional support I could easily adopt the e-learning technology in in-service training.	1	176	3.52	.545	.041
	2	193	3.05	.792	.057

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that if I institutional supp could easily ado e-learning techn in in-service trai	Equal varian assumed	.257	.612	6.663	367	.000	.48	.071	.336	.617
	Equal varian not assumed			6.774	341.796	.000	.48	.070	.338	.614

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that a help desk (7/24) would be needed to help me resolve technical problems.	1	144	3.33	.579	.048
	2	208	3.14	.783	.054

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that a he (7/24) would be n to help me resolve technical problem	Equal varian assumed	1.197	.275	2.530	350	.012	.19	.077	.043	.345
	Equal varian not assumed			2.669	348.436	.008	.19	.073	.051	.337

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that a department would be needed to provide me technical training for easy integration of e-learning.	1	176	3.39	.613	.046
	2	212	3.16	.728	.050

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that a department would needed to provide technical training f integration of e-lea	Equal varian assumed	.008	.931	3.335	386	.001	.23	.069	.095	.367
	Equal varian not assumed			3.389	385.922	.001	.23	.068	.097	.365

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that using e-learning technology in in-service training would have a positive effect on student learning.	1	172	3.30	.509	.039
	2	197	3.02	.802	.057

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that using e-learning technol in-service training have a positive ef student learning.	Equal varian assumed	2.966	.086	3.968	367	.000	.28	.071	.142	.422
	Equal varian not assumed			4.085	336.530	.000	.28	.069	.146	.418

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
I believe that e-learning would benefit TNP in-service training.	1	180	3.40	.535	.040
	2	208	2.98	.851	.059

Independent Samples Test

		Levene's Test for Equality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
I believe that e-le would benefit TN in-service training	Equal varian assumed	.778	.378	5.705	386	.000	.42	.073	.275	.564
	Equal varian not assumed			5.887	353.828	.000	.42	.071	.279	.559

t -Test

Group Statistics

	Trainer or Trainee	N	Mean	Std. Deviation	Std. Error Mean
With the right tool e-learning would benefit TNP training.	1	180	3.42	.539	.040
	2	214	3.31	.763	.052

Independent Samples Test

		Levene's Test for quality of Variance		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	ig. (2-tailed	Mean Difference	Std. Error Difference	Lower	Upper
With the right tc e-learning woul benefit TNP trai	Equal varian assumed	11.697	.001	1.611	392	.108	.11	.068	-.024	.242
	Equal varian not assumed			1.658	380.980	.098	.11	.066	-.020	.239

APPENDIX K

TRANSCRIPT OF THE ORIGINAL RESPONSES FOR OPEN-ENDED QUESTIONS

Trainers' response for open-ended questions

- Teknolojinin ve internetin bu kadar yaygin ve cok amacli kullanildigi bir devirde boyle imkandan yararlanmamayi cok dogru bulmuyorum. Zaten guncel teknolojiyi cok iyi kullandigini dusundugum boyle bir teskilatin online egitmi kullanmamasini bir kayip olarak dusunuyorum.
- Online egitim icin derslerin hazirlanmasi asamasi zaman alici ve zor olabilir ancak bir defa hazirlandiktan sonra surekli gelistirmek daha kolay olacaktir. Tesekkurler
- Bu tur teknolojileri kullanmadan once kullanacak olanlarin mutlaka bu konularda egitilmeleri ve bu egitim ve destek faaliyetlerinin devamliligi gerekir. Teknik altyapinin kurulmasi kadar kullanicilarin surekli teknik olarak desteklenmesi onemlidir. Calismalarinizda basarilar. Tesekkurler
- Hizmet içi eğitimlerde doğru amaç için toplanan doğru hedef kitlenin aynı sınıfta toplanması veya bürolarından online olarak katılması öğrenmedeki verimi pek fazla etkilemeyeceğini düşünüyorum. ancak zaten okuma alışkanlığı olmayan yurdumun insanının daha vahim durumda olan polisini online olarak bir araya toplayarak ve verilenlerden faydalanma imkanını zorlamanın doğru olacağını düşünüyorum en azında ilgisinin bir ara yoğunlaştığı arşivi elinin altında olur.
- Bence online egitim ogrencilerin birbirleri ile yada ogrencilerin egitmenlerle dogrudan iletisimini olumsuz etkileyecegini dusunuyorum. Bence online egitimde bu tur iletisim aksakliklari yasanacaktir. Ayrica online egitim meslektaslarimizin hepsi icin uygun olacagini dusunmuyorum. Ozellikle memur arkadaslarin cok

problemi olacagini dusunuyorum. Ayrica bunun icin saglam bir alt yapiya ihtic var. Bilemiyorum kuskularim mevcut....

- Hollanda'da bir polis okulu sadece online egitim veriyor. Bir yonuyle AGIT'te bu sistem icin kollari sivamis durumda.
- Cok onemli bir calisma oldugunu ve egitime ciddi katkilar yapacagini dusunuyorum.

Trainees' response for open-ended questions

- ABD Polisinde her yil belli bir saat her polis personeli hizmet ici egitim almak zorundadir. bunlarin cogunlugu internet uzerinden online olarak alinmaktadir. bu ayni zamanda kuruma tasarruf dahi saglar. bu online egitim sayesinde her ama her polis personelinin yilda en az 20 saat gibi bir hizmet ici egitim almasi saglanabilir. cok faydali olur. personel kendisini her yil yeni bilgilerle yeniler.
- Online eğitimin teşkilatımız için faydalı olacağını düşünüyorum,ama bunun altyapısını kurmak ve işletmek için bir maaliyet gerkecek bu maliyetin kaldırılması konusunda endişeliyim. Ayrıca yönetim kadememizin yeniliklere çok açık olmadığını ve yeniliklere ayak uydurmakta yavaş kaldığını hatta bazen engellediklerini düşünüyorum. Ama yine de ümitliyim.
- Online hizmet ici egitimin heyecen verici bir yenilik oldugunu dusunuyorum.
- En son yapilan rutbe terfi sinavlari icin verilmis olan online egitime katilmis bir kursiyer olarak karsilastigim sorunlar: 1. Kurs boyunca gorevime devam etmek zorunda birakildim, dolayisiyla kursla hicbir alakam olmadi..kurum yardimi yok.. 2. Bos kaldigim zamanlarda o gunku derslere bakmak istedigimde arsive

baglanmakta zorluklar yasadim..teknik destek yok... 3. Dersleri takip edemedigimden dolayi (yada bu sans verilmedigi icin) aklima gelen sorulari sorma veya yorumda bulunma yada derse aktif olarak katilma imkanim olmadi.

- Dikkatli dizayn edildigi taktirde kesinlikle faydali ve hatta kacinilmaz bir yontem olacaktir.
- Denemeye deger bir yenilik...kesinlikle tasarruf saglayacaktir...internet erisimi sorun olabilir... Online egitim yuz yuze ile desteklenirse daha verimli olacagini dusunuyorum
- Online hizmet ici egitim ayrica bir cok yonde tasarruf sagliyor. Zaman ve para en onemlileri. Gunumuz sartlarinda kesinlikle cok buyuk bir ihtiyac oldugunu dusunuyorum. Nasilki universitelerde online education a dogru bir gecis var; artik organizasyonlarin hizmet ici egtimlerinde de ayni sekilde bir gecisin olmasi gerektigi asikar. Basarilar.
- Yeniliklerin devami icin, fizibilite calismalarinin detayli ve uzun soluklu yapilmasi gerekli. Milyonlarca dolarlik, cekici yatirimlar insanlara bir katki saglamayacaksa ve gereginden fazla pahali yatirimlar bir-kac yil sonra atil duruma dusecekse bundan kacinilmalidir. Makul ve ekonomik yatirimlar fakat faydali olanlar tercih edilmelidir. Bu konuda, onceki benzer kurumlarin uygulamalari incelenmelidir.
- Hizmet ici egitimlerin online verilmesi konusunda en sikintili konunun yoneticilerin online egitime ve etkililigine inanadirilmasinin zorlugu oldugunu dusunuyorum. Hali hazir yoneticilerin ogretmensiz egitim mi olurmus gibi bir tepkilerinin olacagini dusunuyorum.

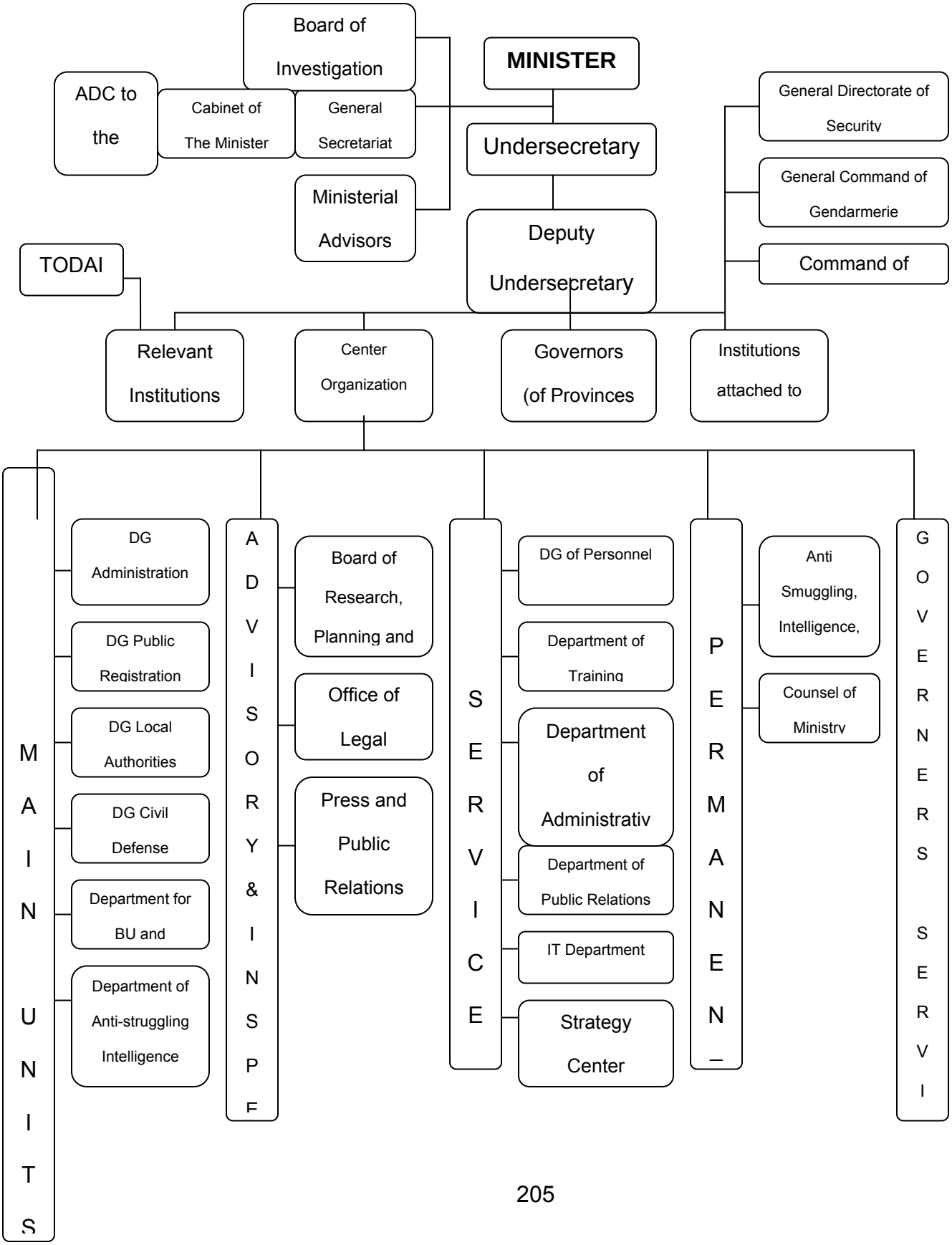
- Online egitim veren universite ve yan kuruluslari mevcut zaten, yenisden bir sey kesfetmeye gerek yok. Yani oluyorki yapiyorlar ve istatistikler incelendiginde gelismis ulkelerde online egitimin giderek arttigini gorebiliriz. Ornek teskil eden bu kurum ve kuruluslarin konuyla alakali feedback' lerinden de istifade edebiliriz.
- Online hizmet ici egitimin, taditional olandan daha cok fayda saglayacagi acik. Muhtemelen anket hazirlanirken bu konular da dusunulmustur, ancak bu asamada teskilatin nicin online egitime gecmesi gerektiginin, makul butce, mevcut problemlerin ne derecede giderilecegi, icerigin zenginlestirilmesi, bolgesel/yoresel ihtiyaclara suratli cevap verilmesi vs. konularin oncelikli degerlendirilmesinde fayda olur diye dusunuyorum.. Basarilar..Saygilarimla..
- Ciddi bir alt yapi olmali ve kursiyerlerin konuyuu gercekten ogrendikleri tespit edilmeli ; bedavadan sertifika alma alt yapisi olmamalidir.
- Bir denemek lazim, cagimizin kacinilmaz gercegi olarak goryorum, hem geride kalmamak icin hemde olcme testleriyle basarisini olcmek icin "online hizmet ici egitimlerin" denenmesi gerektigini dusunuyorum.
- Teskılatın alt yapısının buna POLNET ile cok musait oldugu goz onunde bulundurulabilir bir de kursların iceriginin hazırlanarak online ortama uygun hale getirilmesi cok onemli .
- Hangi egitimlerin online olarak verilmesinin netlestirilmesi halinde , bu tur egitimlere destek artacaktir.

APPENDIX L

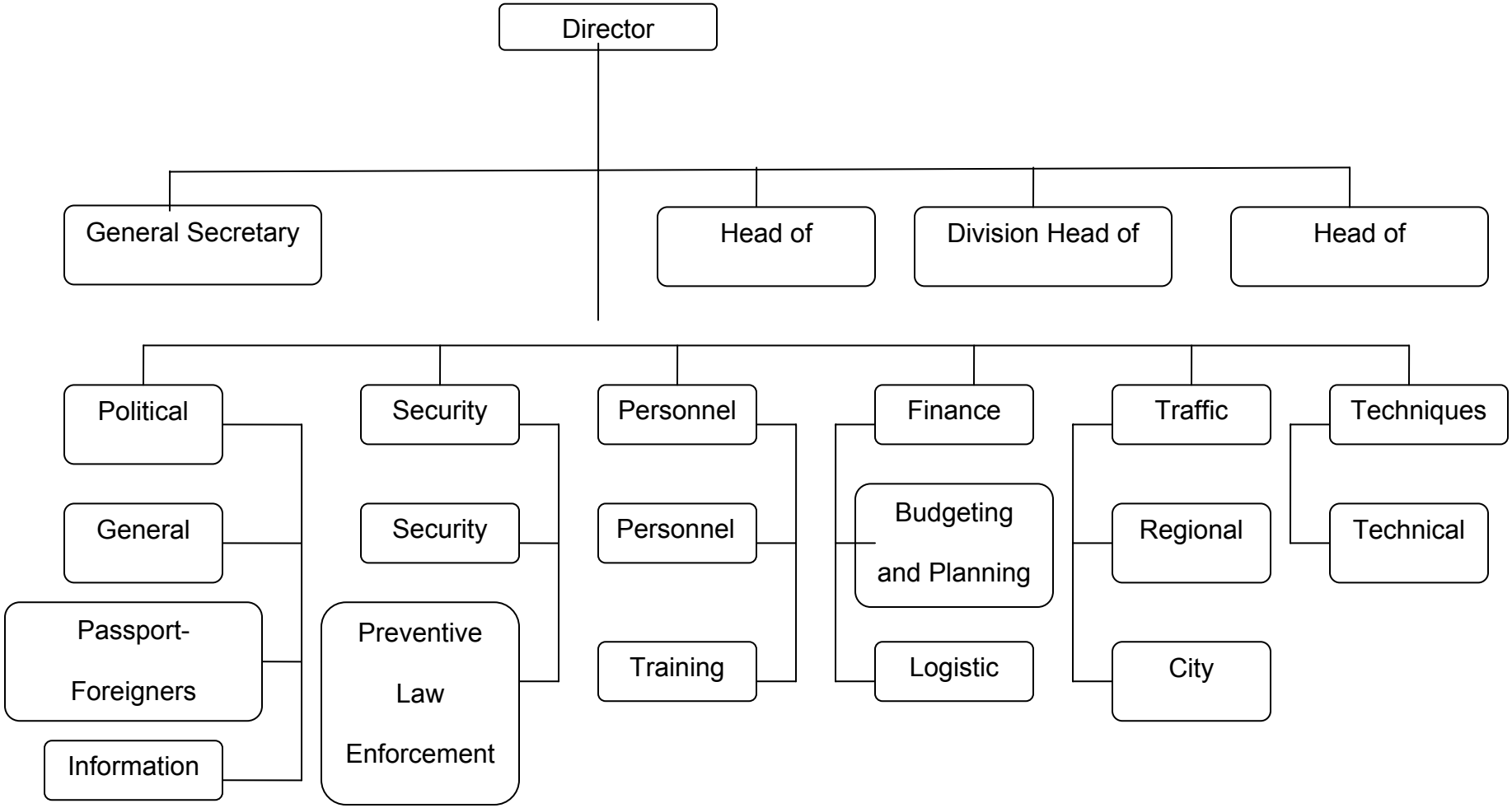
ORGANIZATIONAL STRUCTURE CHARTS

MINISTRY OF INTERIOR*

* Retrieved March 11, 2005 from http://www.icisleri.gov.tr/eng/org.htm



STRUCTURE AND ORGANIZATION OF TURKISH NATIONAL POLICE



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